SAFETY DATA SHEET
THE DOW CHEMICAL COMPANY

Product name: Propylene Glycol USP/EP

Issue Date: 12/09/2016
Print Date: 12/15/2016

THE DOW CHEMICAL COMPANY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: Propylene Glycol USP/EP

Recommended use of the chemical and restrictions on use
Identified uses: We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative. Uses in Coatings, consumer. Use in Cleaning Agents, consumer. Functional Fluids, consumer. Consumer use in agrochemicals. Other Consumer Uses Humectant and solvent for: Foodstuffs. Flavours. Fragrances. Cosmetics. Pharmaceuticals. Personal care applications. Manufacture of substance, industrial. Distribution of substance, industrial. Formulation & (re)packing of substances and mixtures, industrial. Use in laboratories, industrial. Use as binders and release agents, professional. Not for use in cat food.

COMPANY IDENTIFICATION
THE DOW CHEMICAL COMPANY
2030 WILLARD H DOW CENTER
MIDLAND MI 48674-0000
UNITED STATES

Customer Information Number: 800-258-2436
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: CHEMTREC +1 800-424-9300
Local Emergency Contact: 800-424-9300

2. HAZARDS IDENTIFICATION

Hazard classification
This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

Other hazards
No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

100011474

Synonyms: Propylene Glycol
This product is a substance.

Component	CASRN	Concentration
Propylene glycol	57-55-6	> 99.8 %

4. FIRST AID MEASURES

Description of first aid measures
General advice: If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air; if effects occur, consult a physician.

Skin contact: Wash off with plenty of water.

Eye contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

Ingestion: No emergency medical treatment necessary.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Any absorbent material. Collect in suitable and properly labeled open containers. Wash the spill site with large quantities of water. Large spills: Dike area to contain spill. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Product handled hot may require additional ventilation or local exhaust. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store away from direct sunlight or ultraviolet light. Keep container tightly closed when not in use. Store in a dry place. Protect from atmospheric moisture. Store in the following material(s): Stainless steel. Aluminum. Container lined with phenolic or epoxy-phenolic FDA food contact approved coating. 316 stainless steel. Opaque HDPE plastic container.
No special storage conditions required.

Storage stability
Shelf life: Use within 24 Month

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation

Propylene glycol	US WEEL	TWA	10 mg/m3

Exposure controls
Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use safety glasses (with side shields). If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles.

Skin protection

Hand protection: Chemical protective gloves should not be needed when handling this material. Consistent with general hygienic practice for any material, skin contact should be minimized.

Other protection: No precautions other than clean body-covering clothing should be needed.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Colorless
Odor	Odorless
Odor Threshold	No test data available
pH	Not applicable
Melting point/range	< -20 °C (< -4 °F) *EC Method A1*
Freezing point	< -20 °C (< -4 °F) *EC Method A1*
Boiling point (760 mmHg)	184 °C (363 °F) at 752.46 mmHg *EC Method A2*
Flash point	**closed cup** 104 °C (219 °F) at 1,000.1 hPa *EC Method A9* (PMCC)
Evaporation Rate (Butyl Acetate = 1)	0.01 *Estimated.*
Flammability (solid, gas)	Not applicable to liquids
Lower explosion limit	2.6 % vol *Estimated.*
Upper explosion limit	12.5 % vol *Estimated.*
Vapor Pressure	20 Pa at 25 °C (77 °F) *EC Method A4*
Relative Vapor Density (air = 1)	2.62 *Literature*
Relative Density (water = 1)	1.03 at 20 °C (68 °F) / 20 °C *EC Method A3*
Water solubility	100 % at 20 °C (68 °F) *EC Method A6*

Partition coefficient: n-octanol/water	log Pow: -1.07 *Measured*
Auto-ignition temperature	> 400 °C (> 752 °F) at 100.01 kPa *EC Method A15*
Decomposition temperature	No test data available
Dynamic Viscosity	43.4 mPa.s at 25 °C (77 °F) *Literature*
Kinematic Viscosity	No test data available
Explosive properties	Not explosive
Oxidizing properties	No
Liquid Density	1.03 g/cm3 at 20 °C (68 °F) *Literature*
Molecular weight	No data available
Percent volatility	No data available
Pour point	< -57 °C (< -71 °F) *Literature*

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: Stable under recommended storage conditions. See Storage, Section 7. Hygroscopic

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: No data available

Incompatible materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Alcohols. Ethers. Organic acids.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity
Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

LD50, Rat, > 20,000 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

LD50, Rabbit, > 2,000 mg/kg No deaths occurred at this concentration.

Acute inhalation toxicity
At room temperature, exposure to vapor is minimal due to low volatility. Mist may cause irritation of upper respiratory tract (nose and throat).

LC50, Rabbit, 2 Hour, dust/mist, 317.042 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation
Prolonged contact is essentially nonirritating to skin.
Repeated contact may cause flaking and softening of skin.

Serious eye damage/eye irritation
May cause slight temporary eye irritation.
Corneal injury is unlikely.
Mist may cause eye irritation.

Sensitization
Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

Carcinogenicity
Did not cause cancer in laboratory animals.

Teratogenicity
Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity
In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

Mutagenicity
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 40,613 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
LC50, Ceriodaphnia dubia (water flea), static test, 48 Hour, 18,340 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Growth rate inhibition, 19,000 mg/l, OECD Test Guideline 201

Toxicity to bacteria
NOEC, Pseudomonas putida, 18 Hour, > 20,000 mg/l, Method Not Specified.

Chronic aquatic toxicity
Chronic toxicity to aquatic invertebrates
NOEC, Ceriodaphnia dubia (water flea), semi-static test, 7 d, number of offspring, 13,020 mg/l

Persistence and degradability

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Biodegradation may occur under anaerobic conditions (in the absence of oxygen).
10-day Window: Pass
Biodegradation: 81 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent
10-day Window: Not applicable
Biodegradation: 96 %
Exposure time: 64 d
Method: OECD Test Guideline 306 or Equivalent

Theoretical Oxygen Demand: 1.68 mg/mg

Chemical Oxygen Demand: 1.53 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	69.000 %
10 d	70.000 %
20 d	86.000 %

Photodegradation
Atmospheric half-life: 10 Hour
Method: Estimated.

Bioaccumulative potential

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -1.07 Measured
Bioconcentration factor (BCF): 0.09 Estimated.

Mobility in soil

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient (Koc): < 1 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Recycler. Reclaimer. Incinerator or other thermal destruction device. As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customer Information Group at 1-800-258-2436 or 1-989-832-1556 (U.S.), or 1-800-331-6451 (Canada) for further details.

14. TRANSPORT INFORMATION

DOT

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

Not regulated for transport

Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Not regulated for transport

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
This product is not a hazardous chemical under 29CFR 1910.1200, and therefore is not covered by Title III of SARA.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania Worker and Community Right-To-Know Act:
The following chemicals are listed because of the additional requirements of Pennsylvania law:

Components	**CASRN**
Propylene glycol	57-55-6

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

United States TSCA Inventory (TSCA)
All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

16. OTHER INFORMATION

Product Literature
Additional information on this and other products may be obtained by visiting our web page.

Hazard Rating System
NFPA

Health	Fire	Reactivity
1	1	0

Revision
Identification Number: 101201352 / A001 / Issue Date: 12/09/2016 / Version: 11.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

TWA	8-hr Time Weighted Average
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

THE DOW CHEMICAL COMPANY urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

Ronghong Chem

Sichuan Mianzhu Ronghong Chemical Co., Ltd.

Factory Add: Xinshi Industry Park, Mianzhu City, Deyang, Sichuan, P.R.C.

TEL: 0086-28 -87601988 FAX: 0086- 28-87601989 E-mail: sales@rhphos.com

MSDS OF PHOSPHORIC ACID 85%

Issued May 20, 2012

SICHUAN MIANZHU RONGHONG CHEMICAL CO., LTD.

Xinshi Industry Park, Mianzhu City, Deyang, Sichuan, P.R.C

FOR EMERGENCY CALL:

TEL: 0086-28 -87601989

FAX: 0086-28 -87601988

Name:	**Phosphoric acid 85% Material Safety Data Sheet**
Synonym:	Orthophosphoric acid; White phosphoric acid
CAS:	7664-38-2

Section 1 - Chemical Product

MSDS Name: Phosphoric acid 85%

Synonym: Orthophosphoric acid; White phosphoric acid.

Section 2 - COMPOSITION, INFORMATION ON INGREDIENTS

CAS#	Chemical Name	content	EINECS#
7664-38-2	Phosphoric acid	>85	231-633-2
7732-18-5	Water	<15	231-791-2

Text for R-phrases: see Section 16

Hazard Symbols: C

Risk Phrases: 34

Section 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Causes burns.Hygroscopic (absorbs moisture from the air).

Potential Health Effects

Eye:

May cause irreversible eye injury. Contact with liquid is corrosive to the eyes and causes severe burns.

Skin:

Contact with liquid is corrosive and causes severe burns and ulceration. The severity of injury depends on the concentration of the solution and the duration of exposure.

Ingestion:

Causes gastrointestinal tract burns. May cause corrosion and permanent tissue destruction of the esophagus and digestive tract.

Inhalation:

Causes chemical burns to the respiratory tract. Because its vapor pressure is negligible, it exists in the air only as a mist or spray.

Chronic:

Prolonged or repeated skin contact may cause dermatitis.

Section 4 - FIRST AID MEASURES

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.

Skin:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Get medical aid immediately. Wash clothing before reuse.

Ingestion:

If swallowed, do NOT induce vomiting. Get medical aid immediately.

If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician:

Persons with pre-existing skin disorders or impaired respiratory or pulmonary function may be at increased risk to the effects of this substance. Treat symptomatically and supportively.

Section 5 - FIRE FIGHTING MEASURES

General Information:

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Substance is noncombustible. Contact with metals may evolve flammable hydrogen gas.

Extinguishing Media:

Use extinguishing media most appropriate for the surrounding fire.

Section 6 - ACCIDENTAL RELEASE MEASURES

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation. Spill may be carefully neutralized with lime (calcium oxide, CaO).

Section 7 - HANDLING and STORAGE

Handling:

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not ingest or inhale. Use with adequate ventilation. Discard

contaminated shoes.

Storage:

Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from metals. Do not store in metal containers. Store protected from moisture. Store away from alkalies.

Section 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Exposure Limits CAS# 7664-38-2: United Kingdom, WEL - TWA: 1 mg/m3 TWA United Kingdom, WEL - STEL: 2 mg/m3 STEL United States OSHA: 1 mg/m3 TWA Belgium - TWA: 1 mg/m3 VLE Belgium - STEL: 2 mg/m3 VLE France - VME: 1 mg/m3 VME France - VLE: 3 mg/m3 VLE Germany: 1 mg/m3 TWA Japan: 1 mg/m3 OEL Malaysia: 1 mg/m3 TWA Netherlands: 0.5 ppm STEL; 2 mg/m3 STEL Netherlands: 0.2 ppm MAC; 1 mg/m3 MAC Spain: 1 mg/m3 VLA-ED Spain: 2 mg/m3 VLA-EC CAS# 7732-18-5: Personal Protective Equipment Eyes: Wear chemical splash goggles and face shield.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:

A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Clear liquid

Color: APHA: 10 max - colorless viscous

Odor: odorless

pH: 1.5 (0.1N aq. soln)

Vapor Pressure: 0.03 mm Hg @ 20 deg C

Viscosity: 3.86 mPa.s

Boiling Point: 158 deg C @ 760 mm Hg

Freezing/Melting Point: 21 deg C

Autoignition Temperature: Not applicable.

Flash Point: Not applicable.

Explosion Limits, lower: Not available.

Explosion Limits, upper: Not available.

Decomposition Temperature:

Solubility in water: Miscible.

Specific Gravity/Density: 1.685 g/cm3

Molecular Formula: H3O4P

Molecular Weight: 98.00

Section 10 - STABILITY AND REACTIVITY

Chemical Stability:

Stable under normal temperatures and pressures.

Conditions to Avoid:

Excess heat, exposure to moist air or water.

Incompatibilities with Other Materials:

Metals, strong oxidizing agents, strong bases, amines, ammonia, sulfuric acid, nitromethane, sodium tetrahydroborate, A 5% solution of H3PO4 is DOT corrosive to both aluminum & carbon steel (results: 272.1 mils/yr & 319.6 mils/yr, respectively). A 4% H3PO4 solution corrodes aluminum at 209.1 mils/yr & carbon steel at 240.9 mils/yr..

Hazardous Decomposition Products:

Oxides of phosphorus.

Hazardous Polymerization: Will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

RTECS#:

CAS# 7664-38-2: TB6300000 CAS# 7732-18-5: ZC0110000 LD50/LC50:

CAS# 7664-38-2: Draize test, rabbit, eye: 119 mg Severe; Draize test, rabbit, skin: 595 mg/24H Severe; Inhalation, mouse: LC50 = 25.5 mg/m3; Inhalation, rat: LC50 = >850 mg/m3/1H; Inhalation, rat: LC50 = 25.5 mg/m3; Oral, mouse: LD50 = 1.25 gm/kg; Oral, rat: LD50 = 1530 mg/kg; Oral, rat: LD50 = 1.25 gm/kg; Skin, rabbit: LD50 = 2740 mg/kg.

CAS# 7732-18-5: Oral, rat: LD50 = >90 mL/kg.

Carcinogenicity:

Phosphoric acid - Not listed by ACGIH, IARC, or NTP.

Water - Not listed by ACGIH, IARC, or NTP.

Other:

See actual entry in RTECS for complete information.

Section 12 - ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: Mosquito Fish: LC50 = 138 mg/L; 96 Hr; Unspecified Other Dangerous to aquatic life in high concentrations.

Section 13 - DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - TRANSPORT INFORMATION

IATA
Shipping Name: PHOSPHORIC ACID
Hazard Class: 8
UN Number: 1805
Packing Group: III
IMO
Shipping Name: PHOSPHORIC ACID, LIQUID or SOLID
Hazard Class: 8
UN Number: 1805
Packing Group: III
RID/ADR
Shipping Name: PHOSPHORIC ACID
Hazard Class: 8
UN Number: 1805
Packing group: III
USA RQ: CAS# 7664-38-2: 5000 lb final RQ; 2270 kg final RQ

Section 15 - REGULATORY INFORMATION

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: C
Risk Phrases:
R 34 Causes burns.
Safety Phrases:
S 26 In case of contact with eyes, rinse immediately
with plenty of water and seek medical advice.
S 45 In case of accident or if you feel unwell, seek
medical advice immediately (show the label where
possible).
WGK (Water Danger/Protection)
CAS# 7664-38-2: 1
CAS# 7732-18-5: No information available.
Canada
CAS# 7664-38-2 is listed on Canada's DSL List.
CAS# 7732-18-5 is listed on Canada's DSL List.
CAS# 7664-38-2 is listed on Canada's Ingredient Disclosure List.
CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.
US FEDERAL
TSCA
CAS# 7664-38-2 is listed on the TSCA inventory.
CAS# 7732-18-5 is listed on the TSCA inventory.

SAFETY DATA SHEET

1. IDENTIFICATION

Product Identifier
Product Name POTASSIUM PERMANGANATE SOLUTION

Recommended use of the chemical and restrictions on use
Recommended use Iron sulfide remediation
Restrictions on use For industrial use only

Supplier details

West Penetone Inc.
11411-160 Street
Edmonton, AB,
T5M3T7
Tel: 780-454-3919

Emergency Telephone Number
Canutec (613)-996-6666

2. HAZARDS IDENTIFICATION

Classification

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1

Hazardous to the aquatic environment, acute hazard	Category 2
Hazardous to the aquatic environment, long-term hazard	Category 2

Label Elements

DANGER

Hazard Statements
Causes skin irritation
Causes serious eye damage
Toxic to aquatic life
Toxic to aquatic life with long lasting effects

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statements - Response
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician.
IF ON SKIN: Wash with plenty of water. If skin irritation occurs, get medical advice/attention. Take off contaminated clothing and wash it before re-use.
Collect spillage.

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant according to local, provincial/federal regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight %
potassium permanganate	7722-64-7	4

4. FIRST AID MEASURES

Eye contact Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician

Skin contact Wash with plenty of water. If skin irritation occurs, get medical advice/attention. Take off contaminated clothing and wash it before re-use.

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if symptoms develop or persist.

Ingestion Rinse mouth. Remove person to fresh air and keep at rest in a position comfortable for breathing. Do not induce vomiting unless directed by medical personnel. Call a POISON CENTER or doctor/physician if you feel unwell.

Most important symptoms and effects, both acute and delayed

Contact with eyes may cause serious eye damage leading to irritation, discomfort or pain, excess blinking and tear production with marked redness and swelling of the conjunctiva, blurred vision and possible corneal injury. Contact with skin may cause irritation with local redness. Material is destructive to the tissue of the mucous membranes and upper respiratory tract and may be harmful if inhaled. Material may be harmful if swallowed.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media
None.

Specific hazards arising from the chemical
During fire, gases hazardous to health may be formed including oxides of potassium and manganese.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Avoid contact with skin, eyes and clothing. Use personal protective equipment. Use appropriate containment to avoid environmental contamination.

Environmental Precautions
Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains/surface waters/groundwater.

Methods and material for containment and cleaning up
Contain and solidify with inert absorbent material. Keep in suitable, closed containers for disposal. Following product recovery, flush area with water. For large spills, stop flow of material, prevent product from entering drains, and pump off product where this is without risk and possible. Proceed as above.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Handling Avoid contact with skin, eyes and clothing. Avoid inhalation of vapor or mist.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed away from direct sunlight in a dry, cool and well-ventilated place, away from incompatible materials.

Incompatible Materials Organic and combustible materials, strong reducing agents and acids, peroxides, alcohols, nitrates, perchlorates, hypophosphites, hyposulfites, sulphites, oxalates, halides, and hydrides.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
potassium permanganate 7722-64-7	TWA: 0.2 mg/m^3	Not listed	Not listed

Appropriate engineering controls

Engineering Controls Eye wash facilities must be made available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face Protection Safety glasses with side shields or goggles.

Skin and body protection Wear protective gloves and protective clothing.

Respiratory Protection Wear respiratory protection in case of vapor/aerosol release.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice. Routinely wash work clothing and protective equipment to remove contaminants.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE :
Violet liquid
ODOR
Odorless
ODOR THRESHOLD :
Not applicable
pH :
Neutral
MELTING POINT / FREEZING POINT :
0^{o}C
BOILING POINT/BOILING RANGE :
100ºC
FLASH POINT :
None
EVAPORATION RATE, water = 1 :
1
FLAMMABILITY (SOLID, GAS):
Not applicable

VAPOR PRESSURE, mm Hg AT 20ºC :
Not applicable
VAPOR DENSITY (Air = 1) :
Not applicable
RELATIVE DENSITY AT 20ºC:
1.010-1.020
SOLUBILITY IN WATER :
Complete
PARTITION COEFFICIENT, N-OCTANOL/WATER :
Not available
AUTO-IGNITION TEMPERATURE :
None
DECOMPOSITION TEMPERATURE:
Not available
VISCOSITY:
Not available
FLAMMABLE LIMITS :
UPPER: Not applicable **LOWER :** Not applicable

10. STABILITY AND REACTIVITY

Reactivity
Not reactive.

Chemical Stability
Stable under normal conditions.

Possibility of hazardous reactions
Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to Avoid
Extreme temperatures. Store away from incompatible materials.

Incompatible Materials
Organic and combustible materials, strong reducing agents and acids, peroxides, alcohols, nitrates, perchlorates, hypophosphites, hyposulfites, sulphites, oxalates, halides, and hydrides.

Hazardous decomposition products
Under normal conditions of storage and use, hazardous decomposition products should not be produced. Material liberates chlorine in contact with hydrochloric acid. Explosion hazards may occur when in contact with sulphuric acid, peroxides, nitric acid, alcohols, arsenic, phosphorous, sulphur, titanium and aldehydes. Thermal decompositions can lead to release of toxic metal fumes such as oxides of potassium and manganese.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
potassium permanganate 7722-64-7	525 mg/kg (rat)	Not listed	Not listed

Information on likely sources of exposure

Serious eye damage/irritation Causes serious eye damage.
Skin corrosion/irritation Causes skin irritation.
Ingestion Expected to be a low ingestion hazard.
Inhalation Expected to be a low inhalation hazard.

Delayed and immediate effects and also chronic effects from short and long-term exposure

Respiratory or skin sensitization Not a sensitizer.
Germ cell mutagenicity None known.
Carcinogenicity No listed carcinogens.
Reproductive toxicity No information available.
STOT - single exposure No information available.
STOT-repeated exposure No information available.
Aspiration Hazard None.

Symptoms related to the physical, chemical and toxicological characteristics
May cause serious eye damage. Skin irritation.

12. ECOLOGICAL INFORMATION

Ecotoxicity
If available, ecotoxicity values of individual components are shown below.

Chemical Name	Fish	Waterflea	Algae
potassium permanganate 7722-64-7	0.1 mg/L: 96 h ictalurus punctatus LC50	0.06 mg/L: 48 h daphnia magna EC50	Not available

Persistence and degradability
Not applicable to inorganic substances.

Bioaccumulative potential
Does not significantly accumulate in organisms.

Mobility in soil
No information available

Other adverse effects
Do not release untreated into natural waters. No other adverse environmental effects are expected.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method Dispose of in accordance with local regulations.

Contaminated Packaging Empty containers should be taken for local recycling, recovery or waste disposal.

14. TRANSPORT INFORMATION

TDG classification

UN 3082, Environmentally Hazardous Substance, Liquid, N.O.S. (potassium permanganate solution), Class 9, PG III

15. REGULATORY INFORMATION

All ingredients are listed on the DSL

16. OTHER INFORMATION

Preparation Date 22 April, 2016
Revision Date not applicable
Revision Note not applicable

Disclaimer
The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of SDS

SAFETY DATA SHEET

1. Identification

Product identifier **ProChlo, Calcium Hypochlorite**

Other means of identification

SDS number -

Recommended use Disinfection is swimming pools and drinking water, treatment of industrial cooling water, slime control, odor control, sewage and waste water treatment.

Recommended restrictions Use in accordance with supplier's recommendations.

Manufacturer/Importer/Supplier/Distributor information

Company name F2 Industries, LLC

Address 5543 Edmondson Pike # 156
Nashville, TN, 37211 USA

Telephone 615-459-4620

E-mail reb@f2ind.com

Website www.f2ind.com

Contact person William "Reb" Ferrell

Emergency Telephone For Hazardous Materials [or Dangerous Goods] Incidents ONLY (spill, leak, fire, exposure or accident), call CHEMTREC at
CHEMTREC®, USA: 001 (800) 424-9300
CHEMTREC®, Canada: 001 (703) 527-3887

2. Hazard(s) identification

Physical hazards	Oxidizing solids	Category 2
Health hazards	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 1B
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, single exposure	Category 3 (Respiratory Tract irritation)
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 1

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement May intensify fire; oxidizer. Harmful if swallowed. Causes severe skin burns and eye damage. May cause respiratory irritation. Very toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention Keep away from heat. Keep/Store away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Use only outdoors or in a well-ventilated area. Do not breathe mist or vapor. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Do not eat, drink or smoke when using this product. Avoid release to the environment.

Response In case of fire: Use water for extinction. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center/doctor. If exposed: Call a poison center/doctor. Collect spillage.

Storage	Store locked up. Store in a well-ventilated place. Keep container tightly closed.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.

3. Composition/information on ingredients

Substances

Chemical name	CAS number	%
Calcium Hypochlorite	7778-54-3	>65
Calcium Chlorate	10137-74-3	<2
Calcium Carbonate	471-34-1	<2
Calcium Hydroxide	1305-62-0	<2
Sodium Chloride	7647-14-5	<17

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation Remove source of contamination or move victim to fresh air. If breathing has stopped, trained personnel should begin artificial respiration or, if the heart has stopped start CPR (cardiopulmonary resuscitation). Get medical attention immediately.

Skin contact Take off immediately all contaminated clothing. Immediately flush skin with plenty of water. Wash contaminated clothing before reuse.

Eye contact Immediately flush with plenty of lukewarm water for up to 20 minutes. Remove any contact lenses and open eyelids wide apart. Continue rinsing. Take care not to raise contaminated water into affected eye. Get medical attention immediately.

Ingestion Never give anything by mouth if victim is rapidly losing consciousness, or if unconscious or convulsing. Have victim rinse mouth thorough with water. Have victim drum one cup (240-300ml 8-10 oz) to dilute material in stomach. Do not induce vomiting. If vomiting occurs naturally, rinse mouth and repeat administration of water. If breathing has stopped, trained personnel should begin artificial respiration or, if the heart has stopped cardiopulmonary resuscitation (CPR) immediately. Get medical attention immediately.

5. Fire-fighting measures

Means of Extinction: Drench with water and cool surrounding products with water. Water in contact with hot hypochlorite can release hydrochloric acid or chlorine gas. Use appropriate self-fire extinguishing agents – Use water only.

Flash Point and Methods of Determination: Not combustible (does not burn). Be aware that Calcium Hypochlorite can decompose violently at temperatures above 150° C. Releasing heat and oxygen gas.

Upper Flammable Limit: Not applicable.
Lower Flammable Limit: Not applicable.
Auto Ignition temperature: Not applicable.
Hazardous combustions products: Oxygen, Chlorine and Chlorine Monoxide
Protective Equipment: In case of fire wear self-contained breathing apparatus. Use personal protective.

6. Accidental release measures

Personal precautions:	In case of violent reaction and ignition, ensure proper and adequate ventilation and remove all the resources of ignition. Use personal protective requirement and evacuate people to safe areas.
Environmental Precautions:	Ensure the production does not enter the drains and do not allow the material to contaminate ground water systems.
Methods of Clean up:	Protect from contamination and ensure the disposal is done promptly into the suitable containers.

7. Handling and storage

Precautions for safe handling:	Avoid generation dust. Avoid mixing pure material with contaminated material. Use smallest possible amounts in designated areas with adequate ventilation.
Conditions for safe storage:	Store in original containers. Keep container tightly closed in a clean, cool, open and well-ventilated place. Keep out of sun.

8. Exposure controls/personal protection

Engineering Controls:	Local exhaust ventilation required when exposure to dust occurs.
Precautions/Procedure In case of spill:	Restrict access to area until completion of clean up.

Personal Protective Equipment:

Respiration Protection:	Wear dust mask or NIOSH approved type canister type respirator suitable for chlorine.
Eye/Face Protection:	Chemical safety goggles, face shields are necessary.
Skin Protection:	Use impervious gloves, body suite, boots, and/or other resistant protective clothing. Have safety shower/eye wash fountain readily available in the immediate work area.
Materials for Protective Clothing:	Butyl rubber, natural rubber, neoprene, nitrile/polyvinyl chloride, polyurethane, polyvinyl chloride.

9. Physical and chemical properties

Physical state	Solid granules
Appearance Form	White, free flowing granules with a strong chlorine odor.
Odor threshold	Not available.
pH	11.5 (5% Solution)
Specific gravity	2.050 – 2.20 @ 20°C (Water = 1@4 °C)
Melting point/freezing point	Decomposes at temperature above 150°C
Boiling point	Not available.
Vapor Pressure	Not available.
Vapor Density	Not available.
Evaporation Rate	Not available.

10. Stability and reactivity

Reactivity	Calcium Hypochlorite should be kept away from household soap, paint products, sustain lotions, solvents, acid, beverages, lighted cigarettes, combustible material, garbage, dirt, rags, organic material and other pool chemicals. Mixing with any of the above material can initiate a hazardous decomposition of Calcium Hypochlorite. Calcium Hypochlorite should not be mixed with anything but water.
Chemical Instability	Heat, acids, and organic compounds may cause hazardous decomposition of Calcium Hypochlorite. Water added to container to container of Calcium Hypochlorite may generate enough heat to initiate the hazardous decomposition of material.
Ammonia, Urea and conditions of reactivity	From reactive and toxic chloramines
Acids	Release Chlorine gas
Metal Oxides	Can react violently
Hazardous decomposition	Chlorine and Oxygen

Hazardous Polymerization: Does not occur.

Comments: Calcium Hypochlorite is a strong oxidizing agent. Mix only into water contamination of the product may result in chemical reaction with generation of heat, liberation of hazardous gases and possible fire and explosion.

11. Toxicological information

Local effects: When contacted with skid and eyes, causes services caustic burns. If inhaled the corrosive and substances can load to a toxic edema of lungs. Symptoms may be delayed causes throat pain and cough. Ingestion cause burns of the upper digestive and respiratory tracts if swallowed.

Acute Inhalation LC50: (rat) no mortality at 3.5 mg/l (1 hour). Slight to very low toxicity
Acute Dermal LD50: (rabbit) >1000 mg/kg. Slight to very low toxicity
Acute Oral LD50: (rat) 850 mg/kg. Slight to very low toxicity
Carcinogencity Toxicity: Not available.
Reproductive Toxicity: Not available.
Mutagencity: Not available.

12. Ecological information

Ecotoxicity LC50: 0.088mg/L996hr bluegill sunfish – very toxic to aquatic organisms. Make sure not to allow the material contaminate the ground water system.

Environmental fate:
Mobility: Soluble.
Biodegradation: Not available.
Bioaccumulation: Not available.

Physical / Chemical:
Hydrolysis: Not available.
Photolysis: Not available.
Additional information: Not availalble.

13. Disposal considerations

Clean-up: Do not touch spilled material. Prevent material from entering sewers or confined place. Shovel into clean, dry, labeled containers. Flush area with water. Contaminated materials may be dissolved in water, then treated with a reducing agent such as sodium sulphite. Care should be taken while handling contaminated material due to fire risk.

Waste Disposal: Consult appropriate Federal, State/Provincial and local regulatory authorities to ascertain proper disposal procedures. Care should be taken not to mix waste Calcium Hypochlorite with incompatible material. Calcium Hypochlorite should be dissolved in water and the available chlorine should be treated using a reducing agent such as Sodium Sulphite.

14. Transport Information

DOT

UN number: UN3487
UN proper shipping name: Calcium Hypochlorite, Hydrated
Hazard Class: 5.1
Subsidiary risk: 8
Packing group: II
USA – RQ, Hazardous Substance and Quantity: 10 lbs. / 4.5 kg. (Calcium Hypochlorite)
Marine Pollutant: Regular

ICAO/IATA:

UN number: UN3487
UN proper shipping name: Calcium Hypochlorite, Hydrated
Hazard Class: 5.1
Subsidiary risk: 8
Packing group: II

IMDG:

UN number UN3487
UN proper shipping name Calcium Hypochlorite, Hydrated
Class 5.1
Subsidiary risk 8
Packing group II

15. Regulatory information:

EC Labeling Requirements: The product is classified and labeled in accordance with EC directives or respective national laws.

Contains: Calcium Hypochlorite (231-908-7)

Danger Indications:
O – Oxidizing **C – Corrosive** **N – Dangerous Environment**



R8 – Contact with combustible material may cause fire.
R22 – Harmful if swallowed
R31 – Contact with acids liberates toxic gas
R34 – Causes burns
R50 – Very toxic to aquatic organisms

Safety Phrases:
S26 – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S45 – In case of accident or if you feel unwell, seek medical advice immediately
S61 – Avoid release to the environment. Refer to special instructions.
S36/37/39 – Wear suitable protective clothing, gloves, and eye/face protection.
S ½ – Keep locked-up and out of the reach of children.

16. Other Information:

Other Information:
UL Drinking Water Treatment Chemicals Listing- calcium hypochlorite is certified for maximum use at 13mg/L under ANSI/NSF Standard 60.

Risk Phrases:
R8 – Contact with combustible material may cause fire.
R22 – Harmful if swallowed
R31 – Contact with acids liberates toxic gas
R34 – Causes burns
R50 – Very toxic to aquatic organisms

We create chemistry

Safety Data Sheet
Propionic acid pure

1. Identification

Product identifier used on the label

Propionic acid pure

Recommended use of the chemical and restriction on use

* The “Recommended use” identified for this product is provided solely to comply with a US Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company:
BASF CORPORATION
100 Park Avenue
Florham Park, NJ 07932, USA

Telephone: +1 973 245-6000

Emergency telephone number

CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP (4357)

Other means of identification

Synonyms: Propionic Acid. Use: industrial chemical, feed additive

2. Hazards Identification

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Classification of the product

Flam. Liq.	3	Flammable liquids
Skin Corr./Irrit.	1B	Skin corrosion/irritation
Eye Dam./Irrit.	1	Serious eye damage/eye irritation
STOT SE	3 (irritating to respiratory system)	Specific target organ toxicity — single exposure

Label elements

Pictogram:

Signal Word:
Danger

Hazard Statement:

H226	Flammable liquid and vapour.
H335	May cause respiratory irritation.
H314	Causes severe skin burns and eye damage.

Precautionary Statements (Prevention):

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P271	Use only outdoors or in a well-ventilated area.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P243	Take precautionary measures against static discharge.
P260	Do not breathe dust or mist.
P241	Use explosion-proof electrical/ventilating/lighting/equipment.
P264	Wash with plenty of water and soap thoroughly after handling.
P240	Ground/bond container and receiving equipment.
P242	Use only non-sparking tools.

Precautionary Statements (Response):

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/physician.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P301 + P330 + P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P370 + P378	In case of fire: Use water spray, dry powder, foam or carbon dioxide for extinction.

Precautionary Statements (Storage):

P233	Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.

Precautionary Statements (Disposal):

P501	Dispose of contents/container to hazardous or special waste collection point.

Hazards not otherwise classified

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

According to Regulation 1994 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Emergency overview

DANGER:
CORROSIVE.

COMBUSTIBLE LIQUID.
Corrosive to the skin, eyes and respiratory system.
CAUSES EYE BURNS.
CAUSES SKIN BURNS.
MAY BE HARMFUL IF SWALLOWED.
MAY BE HARMFUL IF INHALED.
HARMFUL IF ABSORBED THROUGH SKIN.
INGESTION MAY CAUSE GASTRIC DISTURBANCES.
Avoid contact with the skin, eyes and clothing.
Avoid inhalation of mists/vapours.
Use with local exhaust ventilation.
Wear a NIOSH-certified (or equivalent) acid gas/organic vapour respirator.
Wear NIOSH-certified chemical goggles.
Wear full face shield if splashing hazard exists.
Wear chemical resistant protective gloves.
Wear protective clothing.
Eye wash fountains and safety showers must be easily accessible.

3. Composition / Information on Ingredients

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

CAS Number	Content (W/W)	Chemical name
79-09-4	>= 99.5 - <= 100.0 %	propionic acid

According to Regulation 1994 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

CAS Number	Content (W/W)	Chemical name
79-09-4	>= 99.0 %	propionic acid

4. First-Aid Measures

Description of first aid measures

General advice:
Remove contaminated clothing.

If inhaled:
Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. Immediate medical attention required.

If on skin:
Wash affected areas with water while removing contaminated clothing. Remove contaminated clothing. Immediate medical attention required. Wash contaminated clothing before reuse.

If in eyes:
In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. Immediate medical attention required.

If swallowed:
Rinse mouth and then drink plenty of water. Do not induce vomiting. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Immediate medical attention required.

Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

Indication of any immediate medical attention and special treatment needed

Note to physician

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
water spray, foam, dry powder

Special hazards arising from the substance or mixture

Hazards during fire-fighting:
No particular hazards known.

Advice for fire-fighters

Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:
Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems.

Impact Sensitivity:
Remarks: Based on the chemical structure there is no shock-sensitivity.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: wear a tightly closed chemical protection suit and a self-contained breathing apparatus. Wear acid-resistant boots.

Environmental precautions

Substance/product is RCRA hazardous due to its properties.

Methods and material for containment and cleaning up

Spills should be contained, solidified, and placed in suitable containers for disposal.

7. Handling and Storage

Precautions for safe handling

See MSDS section 10 - Stability and reactivity. See MSDS section 5 - Fire fighting measures.

Protection against fire and explosion:

See MSDS section 5 - Fire fighting measures.

Conditions for safe storage, including any incompatibilities

Segregate from alkalies and alkalizing substances.

Further information on storage conditions: Keep container tightly closed in a cool, well-ventilated place.
Keep container tightly closed and dry; store in a cool place. Avoid extreme heat. Keep away from sources of ignition - No smoking.

Storage stability:
Storage temperature: < 30 °C
Storage duration: <= 36 Months
From the data on storage duration in this safety data sheet no agreed statement regarding the warrantee of application properties can be deduced.

8. Exposure Controls/Personal Protection

Components with occupational exposure limits

propionic acid	OSHA PEL	TWA value 10 ppm 30 mg/m3 ;
	ACGIH TLV	TWA value 10 ppm ;

Advice on system design:
Provide local exhaust ventilation to control vapours/mists.

Personal protective equipment

Respiratory protection:
Wear a NIOSH-certified (or equivalent) acid gas/organic vapour respirator. Do not exceed the maximum use concentration for the respirator facepiece/cartridge combination. For emergency or non-routine, high exposure situations, use a NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions. Observe OSHA regulations for respirator use (29 CFR 1910.134).

Hand protection:
Chemical resistant protective gloves, Consult with glove manufacturer for testing data.

Eye protection:
Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

General safety and hygiene measures:
Eye wash fountains and safety showers must be easily accessible. Wear protective clothing as necessary to prevent contact. Avoid contact with skin and eyes. Take off immediately all contaminated clothing.

9. Physical and Chemical Properties

Form:	liquid	
Odour:	pungent odour	
Odour threshold:		not determined
Colour:	colourless	

pH value:	2.5	(100 g/l, 20 °C)
Melting point:	-20 °C	
Boiling point:	140.7 - 141.6 °C	
Flash point:	50.5 °C	(DIN 51755)
Flammability:	Flammable liquid and vapour.	
Lower explosion limit:		For liquids not relevant for classification and labelling. The lower explosion point may be 5 - 15 °C below the flash point.
Upper explosion limit:		For liquids not relevant for classification and labelling.
Autoignition:	485 °C	(DIN 51794)
Vapour pressure:	5 mbar	(20 °C)
Density:	0.993 g/cm3	(20 °C) Literature data.
	0.957 g/cm3	(55 °C) Literature data.
Partitioning coefficient n-octanol/water (log Pow):	0.25	(25 °C)
	0.33	(Calculation Hansch/Leo)
Self-ignition temperature:		Based on its structural properties the product is not classified as self-igniting.
Thermal decomposition:	not determined	
Viscosity, dynamic:	1.102 mPa.s	(20 °C) Literature data.
Solubility in water:		(20 °C) miscible
Molar mass:	74.08 g/mol	
Evaporation rate:		Value can be approximated from Henry's Law Constant or vapor pressure.

10. Stability and Reactivity

Reactivity

Corrosion to metals:
Corrosive effect on metals.

Oxidizing properties:
Based on its structural properties the product is not classified as oxidizing.

Formation of flammable gases:	Remarks:	Forms no flammable gases in the presence of water.

Chemical stability
The product is chemically stable.

Possibility of hazardous reactions
Reacts with strong alkalies. Exothermic reaction.
The product is chemically stable.

Conditions to avoid
No conditions to avoid anticipated.

Incompatible materials
bases

Hazardous decomposition products

Decomposition products:
No hazardous decomposition products known.

Thermal decomposition:
not determined

11. Toxicological information

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity
Assessment of acute toxicity: Of low toxicity after single ingestion. Virtually nontoxic by inhalation. Of low toxicity after short-term skin contact. Inhalation-risk test (IRT): No mortality within 8 hours as shown in animal studies. The inhalation of a highly saturated vapor-air mixture represents no acute hazard.

Oral
Type of value: LD50
Species: rat
Value: 3,455 mg/kg (BASF-Test)

Inhalation
Type of value: LC50
Species: rat
Value: > 19.7 mg/l
Exposure time: 1 h

Type of value: LC0
Species: rat
Value: 24.4 mg/l (IRT)
Exposure time: 8 h

Dermal
Type of value: LD50
Species: rat (female)
Value: 3,235 mg/kg (other)

Assessment other acute effects
Assessment of STOT single:
Causes temporary irritation of the respiratory tract.

Irritation / corrosion
Assessment of irritating effects: Corrosive! Damages skin and eyes.

Skin
Species: rabbit
Result: Corrosive.
Method: BASF-Test

Eye
Species: rabbit
Result: Risk of serious damage to eyes.

Literature data.

Sensitization
Assessment of sensitization: Skin sensitizing effects were not observed in animal studies. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Guinea pig maximization test
Species: guinea pig
Result: Non-sensitizing.
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Aspiration Hazard
No aspiration hazard expected.

Chronic Toxicity/Effects

Repeated dose toxicity
Assessment of repeated dose toxicity: After repeated administration the prominent effect is the induction of corrosion. No substance-specific organtoxicity was observed after repeated administration to animals.

Genetic toxicity
Assessment of mutagenicity: Results from a number of mutagenicity studies with microorganisms, mammalian cell culture and mammals are available. Taking into account all of the information, there is no indication that the substance is mutagenic. The product has not been fully tested. The statements have been derived in parts from products of a similar structure or composition.

Carcinogenicity
Assessment of carcinogenicity: In long-term animal studies in which the substance was given in high concentrations by feed, a carcinogenic effect was not observed.

Reproductive toxicity
Assessment of reproduction toxicity: The results of animal studies gave no indication of a fertility impairing effect.

Teratogenicity
Assessment of teratogenicity: No indications of a developmental toxic / teratogenic effect were seen in animal studies. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Symptoms of Exposure

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

Medical conditions aggravated by overexposure
Data available do not indicate that there are medical conditions that are generally recognized as being aggravated by exposure to this substance/product. See MSDS section 11 - Toxicological information.

12. Ecological Information

Toxicity

Aquatic toxicity
Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Toxicity to fish
LC50 (96 h) > 10,000 mg/l, Leuciscus idus (DIN 38412 Part 15, static)
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Aquatic invertebrates
EC50 (48 h) > 500 mg/l, Daphnia magna (Directive 84/449/EEC, C.2, static)
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Aquatic plants
EC50 (72 h) > 500 mg/l (biomass), Scenedesmus subspicatus (OECD Guideline 201, static)
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Chronic toxicity to fish
Study scientifically not justified.

Chronic toxicity to aquatic invertebrates
Study scientifically not justified.

Toxicity to terrestrial plants

EC50 (3 d) 125.8 mg/l 188.7 mg/kg, Lactuca sativa
Literature data.

Microorganisms/Effect on activated sludge

Toxicity to microorganisms
DIN EN ISO 8192 aquatic
activated sludge, domestic/EC20 (30 min): 500 - 1,040 mg/l
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Persistence and degradability

Assessment biodegradation and elimination (H2O)
Readily biodegradable (according to OECD criteria). Literature data.

Elimination information

approx. 74 % (30 d) (other) (aerobic, activated sludge, domestic)

Assessment of stability in water
According to structural properties, hydrolysis is not expected/probable.

Bioaccumulative potential

Assessment bioaccumulation potential
Significant accumulation in organisms is not to be expected.

Bioaccumulation potential

Accumulation in organisms is not to be expected.

Mobility in soil

Assessment transport between environmental compartments
The substance will not evaporate into the atmosphere from the water surface.
Adsorption to solid soil phase is not expected.

Additional information

Sum parameter

Chemical oxygen demand (COD): 1,520 mg/g

Biochemical oxygen demand (BOD) Incubation period 5 d: 1,300 mg/g

13. Disposal considerations

Waste disposal of substance:
Do not discharge into waterways or sewer systems without proper authorization. Dispose of in a RCRA-licensed facility. Dispose of in accordance with national, state and local regulations.

Container disposal:
Empty containers with less than 1 inch of residue may be landfilled at a licensed facility. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers. If containers are not empty, they must be disposed of in a RCRA-licensed facility.

RCRA: D002

D001

14. Transport Information

Land transport
USDOT

Hazard class:	8
Packing group:	II
ID number:	UN 3463
Hazard label:	8, 3
Proper shipping name:	PROPIONIC ACID

Sea transport
IMDG

Hazard class:	8
Packing group:	II
ID number:	UN 3463
Hazard label:	8, 3
Marine pollutant:	NO
Proper shipping name:	PROPIONIC ACID

Air transport
IATA/ICAO

Hazard class:	8
Packing group:	II

ID number:	UN 3463
Hazard label:	8, 3
Proper shipping name:	PROPIONIC ACID

15. Regulatory Information

Federal Regulations

Registration status:

Chemical	TSCA, US	released / listed
Feed	TSCA, US	released / exempt

EPCRA 311/312 (Hazard categories): Chronic; Fire; Acute

CERCLA RQ	CAS Number	Chemical name
5000 LBS	64-19-7; 79-09-4	Acetic acid; propionic acid

State regulations

State RTK	CAS Number	Chemical name
MA, NJ, PA	79-09-4	propionic acid

NFPA Hazard codes:
Health : 2 Fire: 2 Reactivity: 0 Special:

HMIS III rating
Health: 3 Flammability: 2 Physical hazard: 0

Assessment of the hazard classes according to UN GHS criteria (most recent version):

Skin Corr./Irrit.	1B	Skin corrosion/irritation
Acute Tox.	5 (oral)	Acute toxicity
Flam. Liq.	3	Flammable liquids
Eye Dam./Irrit.	1	Serious eye damage/eye irritation
Acute Tox.	5 (dermal)	Acute toxicity
STOT SE	3 (irritating to respiratory system)	Specific target organ toxicity — single exposure

16. Other Information

SDS Prepared by:
BASF NA Product Regulations
SDS Prepared on: 2015/02/09

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

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END OF DATA SHEET

SAFETY DATA SHEET

M47054 - ANSI - EN

SODIUM CHLORITE 50K®

SDS No.: M47054 **SDS Revision Date:** 07-May-2015

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Company Identification:	Occidental Chemical Corporation 5005 LBJ Freeway P.O. Box 809050 Dallas, TX 75380-9050 1-800-752-5151
24 Hour Emergency Telephone Number:	1-800-733-3665 or 1-972-404-3228 (USA); CHEMTREC (within USA and Canada): 1-800-424-9300; CHEMTREC (outside USA and Canada): +1 703-527-3887; CHEMTREC Contract No: CCN16186
To Request an SDS:	MSDS@oxy.com or 1-972-404-3245
Customer Service:	1-800-752-5151 or 1-972-404-3700
Product Identifier:	**SODIUM CHLORITE 50K®**
Trade Name:	Sodium Chlorite 50K® Powder
Synonyms:	Sodium Chlorite Dry; Chlorous Acid, Sodium Salt
Product Use:	Textile bleaching
Uses Advised Against:	None identified.

2. HAZARDS IDENTIFICATION

SODIUM CHLORITE 50K®

SDS No.: M47054 **SDS Revision Date:** 07-May-2015

OSHA REGULATORY STATUS: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

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EMERGENCY OVERVIEW:

Color: White
Physical State: Solid
Appearance: Flakes
Odor: Chlorine

Signal Word: **DANGER**

MAJOR HEALTH HAZARDS: CORROSIVE. TOXIC IF INHALED. HARMFUL IF SWALLOWED. CAUSES SERIOUS EYE DAMAGE. CAUSES SKIN IRRITATION. INHALATION MAY CAUSE DAMAGE TO THE RESPIRATORY SYSTEM. INGESTION MAY CAUSE DAMAGE TO: BLOOD SYSTEM, AND KIDNEY SYSTEM. MAY CAUSE DAMAGE TO THE BLOOD AND KIDNEYS THROUGH PROLONGED OR REPEATED EXPOSURES. SUSPECTED OF CAUSING GENETIC DEFECTS.

PHYSICAL HAZARDS: STRONG OXIDIZER. Contact with other materials may cause fire or explosion.

AQUATIC TOXICITY: HARMFUL TO AQUATIC LIFE.

PRECAUTIONARY STATEMENTS: Keep away from heat/ sparks/ open flames/ hot surfaces. - No smoking. Keep/ Store away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles, acids, chlorine or organic materials. Wear protective gloves, protective clothing, eye, and face protection. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Do not breathe dust. Avoid release to the environment.

ADDITIONAL HAZARD INFORMATION: This material is corrosive and an oxidizer. This material's pH and oxidative action contribute to its health and physical hazards.

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GHS CLASSIFICATION:

GHS: CONTACT HAZARD - SKIN:	Category 2 - Causes skin irritation.
GHS: CONTACT HAZARD - EYE:	Category 1 - Causes serious eye damage
GHS: ACUTE TOXICITY - INHALATION:	Category 3 - Toxic if inhaled
GHS: ACUTE TOXICITY - ORAL:	Category 4 - Harmful if swallowed.
GHS: ACUTE TOXICITY - DERMAL:	Not classified as acutely toxic for dermal exposure.
GHS: TARGET ORGAN TOXICITY (SINGLE EXPOSURE):	Category 2 - May cause damage to Respiratory System, Blood, Kidneys
GHS: TARGET ORGAN TOXICITY (REPEATED EXPOSURE):	Category 2 - May cause damage to Blood, Kidney through prolonged or repeated exposure

SODIUM CHLORITE 50K®

SDS No.: M47054 **SDS Revision Date:** 07-May-2015

GHS: CARCINOGENICITY:	Not classified as a carcinogen per GHS criteria. This product is not classified as a carcinogen by NTP, IARC, or OSHA.
GHS: GERM CELL MUTAGENICITY:	Category 2 - Suspected of causing genetic defects
GHS: HAZARDOUS TO AQUATIC ENVIRONMENT - ACUTE HAZARD:	Category 3 - Harmful to aquatic life

UNKNOWN ACUTE TOXICITY: Not applicable. This product was tested as a whole. This information only pertains to untested mixtures. 100% of this product consists of ingredient(s) of known acute toxicity.

GHS SYMBOL: Oxidizer, Skull and Crossbones, Corrosion, Health hazard

GHS SIGNAL WORD: **DANGER**

GHS HAZARD STATEMENTS:

GHS - Physical Hazard Statement(s)
May intensify fire; oxidizer

GHS - Health Hazard Statement(s)
Toxic if inhaled
Harmful if swallowed
Causes serious eye damage
Causes skin irritation
May cause damage to organs: (Respiratory, Kidney, and Blood systems)
May cause damage to the Renal system (Kidneys), and Blood system through prolonged or repeated exposure
Suspected of causing genetic defects

GHS - Precautionary Statement(s) - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Do not breathe dust, fume, gas, mist, vapors, or spray
In case of inadequate ventilation, wear respiratory protection
Wear protective gloves, protective clothing, eye, and face protection
Wash thoroughly after handling
Use only outdoors or in a well-ventilated area
Do not eat, drink or smoke when using this product
Keep away from heat
Keep/Store away from clothing and other combustible materials
Take any precaution to avoid mixing with combustibles

GHS - Precautionary Statement(s) - Response
IF INHALED: Remove person to fresh air and keep comfortable for breathing
Specific treatment (see First Aid information on product label and/or Section 4 of the SDS)
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth
IF ON SKIN: Wash with plenty of water
If skin irritation or rash occurs: Get medical advice/attention
Take off contaminated clothing and wash it before reuse
IF exposed: Call a POISON CENTER or doctor/physician
In case of fire: Use agent suitable for surrounding fire to extinguish

GHS - Precautionary Statement(s) - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

See Section 11: TOXICOLOGICAL INFORMATION

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: Sodium Chlorite Dry; Chlorous Acid, Sodium Salt

Component	Percent [%]	CAS Number
Sodium chlorite	45 - 60	7758-19-2
Sodium nitrate	40 - 50	7631-99-4
Water	0 - 5	7732-18-5
Sodium Chloride	0 - 5	7647-14-5

4. FIRST AID MEASURES

INHALATION: If inhalation occurs and adverse effects result, remove to uncontaminated area. Evaluate ABC's (is Airway constricted, is Breathing occurring, and is blood Circulating) and treat symptomatically. GET MEDICAL ATTENTION IMMEDIATELY. Specific Treatment: There is no specific antidote. Treat symptomatically. Pulse oximetry may not be reliable, see notes to physician.

SKIN CONTACT: Brush off excess chemical. Remove contaminated clothing, jewelry and shoes. Wash contaminated areas with large amounts of water. GET MEDICAL ATTENTION IMMEDIATELY. Thoroughly clean and dry contaminated clothing before reuse. Discard contaminated leather goods.

EYE CONTACT: Immediately flush contaminated eyes with a directed stream of water for as long as possible. Remove contact lenses, if present, then continue rinsing. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION: If swallowed, do not induce vomiting. Give large amounts of water. If vomiting occurs spontaneously, keep airway clear. Give more water when vomiting stops. Never give anything by mouth to an unconscious or convulsive person. GET MEDICAL ATTENTION IMMEDIATELY. For specific treatment, see Notes to Physician.

Most Important Symptoms/Effects (Acute and Delayed) :.

Acute Symptoms/Effects: Listed below.
Inhalation (Breathing): Respiratory System Effects: Inhalation exposure may cause irritation, redness of upper and lower airways, coughing, laryngeospasm and edema, shortness of breath, bronchoconstriction, and possible pulmonary edema. Severe and permanent scarring may occur. The pulmonary edema may develop several hours after a severe acute exposure.
Skin: Skin Irritation. Skin exposure may cause irritation, redness, itching, swelling, burning sensation.
Eye: Serious Eye Damage. Exposure to eyes may cause irritation and burns to the eye lids, conjunctivitis, corneal edema, and corneal burn. Significant and prolonged contact may cause damage to the internal contents of the eye.
Ingestion (Swallowing): Ingesting this material may cause irritation, nausea, and vomiting. Oxidation may cause significant metabolic issues such as: methemogobinemia, hemolysis, and intravascular coagulation and renal failure.

Delayed Symptoms/Effects:
- Repeated and prolonged skin contact may cause a dermatitis
- Prolonged and repeated exposure to this material is suspected of causing genetic effects

Interaction with Other Chemicals Which Enhance Toxicity: Mixing with ammonia, acids, detergents, or organic matter will release chlorinated compounds, which are irritating to eyes, lungs, and mucus membranes. Chlorine dioxide vapors are emitted when this product contacts acids, chlorine, or bleach.

Medical Conditions Aggravated by Exposure: May aggravate preexisting conditions such as:. Eye disorders that decrease tear production or have reduced integrity. Skin disorders that compromise the integrity of the skin. Respiratory conditions including asthma and other breathing disorders. Ingestion may induce G6PD deficiency, hemolysis and renal failure. G6PD deficiency, hemoglobinopathies, renal compromise, and conditions causing hypoxia may be aggravated by ingestion of this material.

Protection of First-Aiders: Protect yourself by avoiding contact with this material. Avoid contact with skin and eyes. Do not ingest. Do not breathe dust. Use personal protective equipment. Refer to Section 8 for specific personal protective equipment recommendations. At minimum, treating personnel should utilize PPE sufficient for prevention of bloodborne pathogen transmission.

Notes to Physician: Chlorine dioxide vapors are emitted when this product contacts acids or chlorine. If these vapors are inhaled, monitor patient closely for delayed development of pulmonary edema which may occur up to 48-72 hours post-inhalation. Following ingestion, neutralization and use of activated charcoal is not indicated. Probable mucosal damage may contraindicate the use of gastric lavage. Treat as a corrosive due to the pH of this material. This is also a strong oxidizer which will react with tissue in the presence of water. For prolonged exposures and significant exposures, consider delayed injury to exposed tissues. There is no specific antidote. Treatment is supportive care. Follow normal parameters for airway, breathing, and circulation. Ingestion of even small amounts of solution should be closely monitored for methemoglobinemia, hemolysis, and glutathione depletion, followed by renal failure. This chemical acts similarly to its related compound chlorate, and produces a drug induced G6PD deficiency. Methylene blue has not been reported as effective. Consult the PubMed Case Report PMID 22996135 for the case description and treatment utilized.

5. FIRE-FIGHTING MEASURES

Fire Hazard: Negligible fire hazard. Strong oxidizer. This product may represent an explosion hazard if it contacts acids, chlorine or organic materials (Refer to Section 10).

Extinguishing Media: Use extinguishing agents appropriate for surrounding fire.

Fire Fighting: Wear NIOSH approved positive-pressure self-contained breathing apparatus. Consider evacuation of personnel located downwind. Keep unnecessary people away, isolate hazard area and deny entry. Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Flood with fine water spray. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

Hazardous Combustion Products:	Chlorine, Oxides of sodium
Sensitivity to Mechanical Impact:	Avoid mechanical shock or impact, if contaminated with combustible material.
Sensitivity to Static Discharge:	Not sensitive.
Lower Flammability Level (air):	Not flammable
Upper Flammability Level (air):	Not flammable
Flash point:	Not applicable
Auto-ignition Temperature:	Not applicable

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:
Isolate hazard area and deny entry. Keep unnecessary and unprotected personnel from entering the area. Avoid contact with skin and eyes. Do not breathe dust, fume, gas, mist, vapors, or spray. Do not ingest. Wear appropriate personal protective equipment recommended in Section 8, Exposure Controls / Personal Protection, of the SDS.

Methods and Materials for Containment and Cleaning Up:
DO NOT use floor sweeping compounds to clean up spills. Dampen and scoop spilled material into clean, dedicated equipment. Do not dry sweep. Every attempt should be made to avoid mixing spilled material with other chemicals or debris when cleaning up. Keep collected material damp and put into drums. Dispose of in accordance with all applicable regulations.

Environmental Precautions:
This material is harmful to aquatic life. This material is alkaline and may raise the pH of surface waters with low buffering capacity. Keep out of water supplies and sewers. Should not be released into the environment. Releases should be reported, if required, to appropriate agencies.

7. HANDLING AND STORAGE

Precautions for Safe Handling:
Do not taste or swallow. Do not get in eyes, on skin, or on clothing. Avoid breathing vapors or dust when opening container. Avoid creation of dust or fumes. Wash thoroughly after handling. Use clean, dry utensils. Do not add the product to any dispensing device containing residuals of other products. Contamination may start a chemical reaction with generation of heat, liberation of hazardous gases (chlorine dioxide a poisonous, explosive gas), and possible fire and explosion. Do not contaminate with acids, reducing agents, combustible materials, oxidizing materials, hypochlorite, organic solvents and compounds, garbage, dirt, organic matter, household products, chemicals, soap products, paint products, vinegar, beverages, oils, pine oil, dirty rags, sulfur-containing rubber, or any other foreign matter. Do not drop, roll or skid drums.

Safe Storage Conditions:
Store and handle in accordance with all current regulations and standards. Consult local fire codes. (NFPA Oxidizer Classification 3). Store in tightly closed, labeled containers away from combustible materials. Store in a cool, dry area. Store in a well-ventilated area. Do not allow water to get in container. Store below 125 °F (52 °C). Avoid exposure to sunlight or ultraviolet light. Keep separated from incompatible substances (see below or Section 10 of the Safety Data Sheet).

Incompatibilities/ Materials to Avoid:
acids, reducing agents, combustible material, oxidizing agents, hypochlorite, organic solvents and compounds, garbage, dirt, organic materials, household products, chemicals, soap products, paint products, vinegar, beverages, oils, pine oil, dirty rags, sulfur-containing rubber, or any other foreign matter

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Regulatory Exposure Limit(s): None. This product does not contain any components that have regulatory occupational exposure limits (OEL's) established.

OEL: Occupational Exposure Limit; OSHA: United States Occupational Safety and Health Administration; PEL: Permissible Exposure Limit; TWA: Time Weighted Average; STEL: Short Term Exposure Limit

NON-REGULATORY EXPOSURE LIMIT(S): Listed below for the product components that have advisory (non-regulatory) occupational exposure limits (OEL's) established.
- *The Non-Regulatory United States Occupational Safety and Health Administration (OSHA) limits, if shown, are the Vacated 1989 PEL's (vacated by 58 FR 35338, June 30, 1993).*

- The American Conference of Governmental Industrial Hygienists (ACGIH) is a voluntary organization of professional industrial hygiene personnel in government or educational institutions in the United States. The ACGIH develops and publishes recommended occupational exposure limits each year called Threshold Limit Values (TLVs) for hundreds of chemicals, physical agents, and biological exposure indices.

OXY REL 8 hr TWA	1 mg/m³ recommended Time Weighted Average - 8 hour (internal Occupational Exposure Limit) This value is based on potential systemic effects from inhalation of sodium chlorite dust

ENGINEERING CONTROLS: Use only in well-ventilated areas. Provide local exhaust ventilation where dust or mist may be generated. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection: Wear chemical safety goggles. Where splashing or spraying is possible, use a face-shield in addition to chemical protective goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin and Body Protection: Wear protective clothing to minimize skin contact. Contaminated clothing should be removed and laundered before reuse. Discard contaminated leather goods.

Hand Protection: Wear appropriate chemical resistant gloves. Consult a glove supplier for assistance in selecting an appropriate chemical resistant glove.

Protective Material Types: Neoprene

Respiratory Protection: A NIOSH approved respirator with N95 (dust, fume, mist) cartridges may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits, or when symptoms have been observed that are indicative of overexposure. If chlorine or chlorine dioxide is present, an acid gas cartridge is also required. An approved self-contained breathing apparatus operated in the pressure demand mode or an airline respirator with escape pack is required when an air purifying respirator is not adequate or for spills / emergencies of unknown concentrations. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Appearance:	Flakes
Color:	White
Odor:	Chlorine
Odor Threshold [ppm]:	No data available.
Molecular Weight:	90.45
Molecular Formula:	NaClO2
Decomposition Temperature:	No data available
Boiling Point/Range:	Not applicable
Freezing Point/Range:	Not applicable to solids.
Melting Point/Range:	No data available
Vapor Pressure:	Not applicable
Vapor Density (air=1):	Not applicable
Density:	No data available
Water Solubility:	No data available

pH:	12 @ 25°C (25% solution)
Evaporation Rate (ether=1):	Not applicable
Partition Coefficient (n-octanol/water):	No data available
Flash point:	Not applicable
Flammability (solid, gas):	Not flammable
Lower Flammability Level (air):	Not flammable
Upper Flammability Level (air):	Not flammable
Auto-ignition Temperature:	Not applicable
Viscosity:	Not applicable

10. STABILITY AND REACTIVITY

Reactivity: Not reactive under normal temperatures and pressures.

Chemical Stability: Stable at normal temperatures and pressures.

Possibility of Hazardous Reactions:
Avoid heat, flames, sparks and other sources of ignition. Avoid contamination with foreign materials. Avoid exposure to sunlight or ultraviolet light.

Conditions to Avoid:
(e.g., static discharge, shock, or vibration) -. Avoid mechanical shock or impact, if contaminated.

Incompatibilities/ Materials to Avoid:
acids. reducing agents. combustible material. oxidizing agents. hypochlorite. organic solvents and compounds. garbage. dirt. organic materials. household products. chemicals. soap products. paint products. vinegar, beverages, oils, pine oil, dirty rags, sulfur-containing rubber, or any other foreign matter.

Hazardous Decomposition Products: Chlorine dioxide is formed on contact with acids, Thermal decomposition products include chlorine and oxides of sodium

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA:

PRODUCT TOXICITY DATA: SODIUM CHLORITE 50K®

LD50 Oral:	LD50 Dermal:	LC50 Inhalation:
376 mg/kg (Rat)	>2000 mg/kg (Rabbit)	0.58 mg/L (4 hr. - Rat)

COMPONENT TOXICITY DATA:
Note: The component toxicity data is populated by the LOLI database and may differ from the product toxicity data given.

Component	LD50 Oral:	LD50 Dermal:	LC50 Inhalation:
Sodium chlorite 7758-19-2	165 mg/kg (Rat)	107.2 mg/kg (Rabbit)	230 mg/m^3 (4 hr-Rat)
Sodium nitrate 7631-99-4	1267 mg/kg (Rat)	-----	-----
Sodium Chloride 7647-14-5	3 g/kg (Rat)	10 g/kg (Rabbit)	42 g/m^3 (1 hr-Rat)

****

POTENTIAL HEALTH EFFECTS:

Eye contact: Causes serious eye damage. Eye exposures may cause burns to the eye lids, conjunctivitis, corneal edema, and corneal burn. May cause permanent eye damage including blindness. Significant and prolonged contact may cause damage to the internal contents of eye.

Skin contact: Contact causes skin irritation. Direct contact with wet material or by moist skin may cause severe irritation, pain, and possibly burns.

Inhalation: Toxic if inhaled. Inhalation may cause coughing, irritation (possibly severe), redness of upper and lower airways, shortness of breath, chemical burns and possibly pulmonary edema. Pulmonary edema may develop several hours after a severe acute exposure.

Ingestion: Harmful if swallowed. Ingestion may cause irritation, nausea, and vomiting. May induce methemoglobinemia, hemolysis, and intravascular coagulation and renal failure.

SIGNS AND SYMPTOMS OF EXPOSURE:
Depending on the degree and duration of exposure, possible signs and symptoms from contact of this material with the skin and eyes, breathing this material, and swallowing this material may include:.

Inhalation (Breathing): Respiratory System Effects: Inhalation exposure may cause irritation, redness of upper and lower airways, coughing, laryngeospasm and edema, shortness of breath, bronchoconstriction, and possible pulmonary edema. Severe and permanent scarring may occur. The pulmonary edema may develop several hours after a severe acute exposure.
Skin: Skin Irritation. Skin exposure may cause irritation, redness, itching, swelling, burning sensation.
Eye: Serious Eye Damage. Exposure to eyes may cause irritation and burns to the eye lids, conjunctivitis, corneal edema, and corneal burn. Significant and prolonged contact may cause damage to the internal contents of the eye.
Ingestion (Swallowing): Ingesting this material may cause irritation, nausea, and vomiting. Oxidation may cause significant metabolic issues such as: methemogobinemia, hemolysis, and intravascular coagulation and renal failure.

CHRONIC TOXICITY:
Sodium chlorite has produced hemolytic anemia in several animal species at concentrations of 100 mg/L or higher. In a subchronic study using rats, hematological alterations included decreased erthrocyte counts, hemoglobin levels, and hemacrit. Methemoglobin levels decreased in females, but increased in males. There is no evidence of kidney effects in humans; however, in animal studies with sodium chlorite, there is limited evidence of kidney effects. Sodium nitrate may cause damage to the blood system. Sodium nitrate has tested positive and negative in genetic assays, and is suspected of causing genetic defects.

Interaction with Other Chemicals Which Enhance Toxicity: Mixing with ammonia, acids, detergents, or organic matter will release chlorinated compounds, which are irritating to eyes, lungs, and mucus membranes. Chlorine dioxide vapors are emitted when this product contacts acids, chlorine, or bleach.

****

GHS HEALTH HAZARDS:

GHS: ACUTE TOXICITY - ORAL: Category 4 - Harmful if swallowed.

GHS: ACUTE TOXICITY - DERMAL: Not classified as acutely toxic for dermal exposure.

GHS: ACUTE TOXICITY - INHALATION: Category 3 - Toxic if inhaled.

GHS: CONTACT HAZARD - SKIN: Category 2 - Causes skin irritation

GHS: CONTACT HAZARD - EYE: Category 1 - Causes serious eye damage

GHS: CARCINOGENICITY:
Not classified as a carcinogen per GHS criteria. This product is not classified as a carcinogen by NTP, IARC, or OSHA.

Component	NTP:	IARC (GROUP 1):	IARC (GROUP 2):	OSHA:
Sodium nitrate	Not listed	Not listed	Group 2	Listed

SPECIFIC TARGET ORGAN TOXICITY (Single Exposure):
Category 2 - Respiratory system, Blood, Kidneys

SPECIFIC TARGET ORGAN TOXICITY (Repeated or Prolonged Exposure):
Category 2 - Blood, Kidneys

MUTAGENIC DATA:
Category 2 - Suspected of causing genetic defects. Sodium chlorite has tested positive in some studies. The significance of these test results for human health is unclear because the oxidizing effects of the chlorite or salting effects of sodium may significantly affect the ability of the tests to accurately detect mutagens. Sodium nitrate has tested positive and negative in genetic assays.

REPRODUCTIVE TOXICITY:
Not classified as a reproductive toxin per GHS criteria. There is limited evidence of male reproductive effects in animal studies. Sodium nitrate is genotoxic in some mammalian test systems at high doses; however, there is no evidence of reproduction or lactation effects due to sodium nitrate.

DEVELOPMENTAL TOXICITY:
Not classified as a developmental or reproductive toxin per GHS criteria. Observations in animal studies include decreased serum levels of thyroid hormones in offspring.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

Aquatic Toxicity:
LC50 rainbow trout = 290 mg/l as 80% NaClO2 (96 hour); LC50 bluegill = 265-310 mg/l as 80% NaClO2 (96 hour); LC50 Sheepshead minnow = 62-90 ppm (96 hour)

Invertebrate Toxicity:
LC50 Daphnia Magna = 0.29 mg/L as 80% NaClO2 (48 hour)

Other Toxicity:
LD50 Mallard duck = 0.49-1.00g/kg as 80% NaClO2 (gavage); LD50 Bob White quail = 0.66 g/kg as 80% NaClO2 (gavage); Sodium chlorite in the diet of birds was not acutely toxic. Eight-day dietary LC50's in the Mallard duck and Bob White quail were > 10,000 ppm

FATE AND TRANSPORT:

BIODEGRADATION: Chlorite ions are reduced by some bacteria under anaerobic conditions

PERSISTENCE: This material will eventually degrade to sodium chloride

BIOCONCENTRATION: This material will not bioaccumulate.

13. DISPOSAL CONSIDERATIONS

Waste from material:
Dispose in accordance with all applicable regulations. Do not put product, spilled product, or filled or partially filled containers into the trash or waste compactor. Contact with incompatible materials could cause a reaction and fire. Keep out of water supplies and sewers. May be subject to disposal regulations.

Container Management:
Container management: Containers are non-refillable. Do not reuse or refill containers. Offer for recycling if available. Offer for reconditioning if appropriate. Triple rinse container promptly after emptying. Triple rinse containers 5-gallons or smaller as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Triple rinse containers larger than 5 gallons as follows: Empty remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse about 40 PSI for at least 30 seconds. Drain for 10 seconds, after the flow begins to drip. Container rinsate must be disposed of in compliance with applicable regulations.

14. TRANSPORT INFORMATION

LAND TRANSPORT

U.S. DOT 49 CFR 172.101:

UN NUMBER: UN1496
PROPER SHIPPING NAME: Sodium chlorite mixture (contains Sodium nitrate)
HAZARD CLASS/ DIVISION: 5.1
PACKING GROUP: II
LABELING REQUIREMENTS: 5.1

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

UN NUMBER: UN1496
SHIPPING NAME: Sodium chlorite mixture (contains Sodium nitrate)
CLASS OR DIVISION: 5.1
PACKING/RISK GROUP: II
LABELING REQUIREMENTS: 5.1

MARITIME TRANSPORT (IMO / IMDG) :

UN NUMBER: UN1496
PROPER SHIPPING NAME: Sodium chlorite mixture (contains Sodium nitrate)
HAZARD CLASS / DIVISION: 5.1
Packing Group: II
LABELING REQUIREMENTS: 5.1

15. REGULATORY INFORMATION

U.S. REGULATIONS

OSHA REGULATORY STATUS:
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
If a release is reportable under CERCLA section 103, notify the state emergency response commission and local emergency planning committee. In addition, notify the National Response Center at (800) 424-8802 or (202) 426-2675.

SARA EHS Chemical (40 CFR 355.30)
Not regulated

EPCRA SECTIONS 311/312 HAZARD CATEGORIES (40 CFR 370.10):
Acute Health Hazard, Chronic Health Hazard, Fire Hazard

EPCRA SECTION 313 (40 CFR 372.65):
Not regulated.

Component	Status:
Sodium nitrate	1.0 %

OSHA PROCESS SAFETY (PSM) (29 CFR 1910.119):
Not regulated

NATIONAL INVENTORY STATUS

U.S. INVENTORY STATUS: Toxic Substance Control Act (TSCA): All components are listed or exempt.

TSCA 12(b): This product is not subject to export notification.

Canadian Chemical Inventory: All components of this product are listed on either the DSL or the NDSL.

STATE REGULATIONS

California Proposition 65:
This product and its ingredients are not listed, but it may contain impurities/trace elements known to the State of California to cause cancer or reproductive toxicity as listed under Proposition 65 State Drinking Water and Toxic Enforcement Act. For additional information, contact OxyChem Technical Services at 1-800-733-1165.

SODIUM CHLORITE 50K®

SDS No.: M47054 **SDS Revision Date:** 07-May-2015

Component	California Proposition 65 Cancer WARNING:	California Proposition 65 CRT List - Male reproductive toxin:	California Proposition 65 CRT List - Female reproductive toxin:	Massachusetts Right to Know Hazardous Substance List	New Jersey Right to Know Hazardous Substance List	New Jersey Special Health Hazards Substance List
Sodium chlorite 7758-19-2	Not Listed	Not Listed	Not Listed	Listed	1689	corrosive; reactive - second degree
Sodium nitrate 7631-99-4	Not Listed	Not Listed	Not Listed	Listed	3722	Not Listed

Component	New Jersey - Environmental Hazardous Substance List	Pennsylvania Right to Know Hazardous Substance List	Pennsylvania Right to Know Special Hazardous Substances	Pennsylvania Right to Know Environmental Hazard List	Rhode Island Right to Know Hazardous Substance List
Sodium chlorite 7758-19-2	Not Listed	Listed	Not Listed	Not Listed	Not Listed
Sodium nitrate 7631-99-4	Listed	Listed	Not Listed	Not Listed	Listed

CANADIAN REGULATIONS

• This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations

WHMIS - Classifications of Substances:

• C - Oxidizing Material
• D1A - Poisonous and Infectious Material; Materials causing immediate and serious toxic effects - Very toxic material
• D1B - Poisonous and Infectious Material; Materials causing immediate and serious toxic effects - Toxic material
• E - Corrosive material

16. OTHER INFORMATION

Prepared by: OxyChem Corporate HESS - Product Stewardship

Rev. Date: 07-May-2015

HMIS: (SCALE 0-4) (Rated using National Paint & Coatings Association HMIS: Rating Instructions, 2nd Edition)

Health Rating: 3* **Flammability Rating:** 0 **Reactivity Rating:** 1

NFPA 704 - Hazard Identification Ratings (SCALE 0-4)

Health Rating: 1 **Flammability:** 0 **Reactivity Rating:** 1

SODIUM CHLORITE 50K®

SDS No.: M47054 **SDS Revision Date:** 07-May-2015

Reason for Revision:
• Updated the (M)SDS header
• Changed the SDS format to meet the GHS requirements of the revised 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200}
• Updated 24 Hour Emergency Telephone Number: SEE SECTION 1
• Product Identifier has been added or updated: SEE SECTION 1
• Updated Uses Advised Against information: SEE SECTION 1
• Revised Hazard(s) Identification information: SEE SECTION 2
• Added OSHA Status: SEE SECTION 2
• Emergency Overview was revised: SEE SECTION 2
• Added GHS Information: SEE SECTION 2
• Updated First Aid Measures: SEE SECTION 4
• Modified Fire Fighting Measure Recommendations: SEE SECTION 5
• Revised Accidental Release Measures: SEE SECTION 6
• Revised Handling and Storage Recommendations: SEE SECTION 7
• PPE recommendations have been modified: SEE SECTION 8
• Updated Physical and Chemical Properties. SEE SECTION 9
• Stability and Reactivity recommendations: SEE SECTION 10
• Toxicological Information has been revised: SEE SECTION 11
• Updated Disposal Considerations. SEE SECTION 13
• Revised Preparer Information: SEE SECTION 16
• Added SDS Revision Date: SEE SECTION 16
• Added/Updated Revision Log: SEE SECTION 16
• Added "End of Safety Data Sheet" phrase

IMPORTANT:
The information presented herein, while not guaranteed, was prepared by technical personnel and is true and accurate to the best of our knowledge. NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTY OR GUARANTY OF ANY OTHER KIND, EXPRESSED OR IMPLIED, IS MADE REGARDING PERFORMANCE, SAFETY, SUITABILITY, STABILITY OR OTHERWISE. This information is not intended to be all-inclusive as to the manner and conditions of use, handling, storage, disposal and other factors that may involve other or additional legal, environmental, safety or performance considerations, and OxyChem assumes no liability whatsoever for the use of or reliance upon this information. While our technical personnel will be happy to respond to questions, safe handling and use of the product remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as, a recommendation to infringe any existing patents or to violate any Federal, State, local or foreign laws

OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Safety Data Sheet available to your employees

End of Safety Data Sheet

Sulfuric Acid 93%
Safety Data Sheet (SDS)

Health	**3**
Fire	**0**
Reactivity	**0**
Personal Protection	

Section 1: Chemical Product and Company Identification

Product Name: Sulfuric Acid 93%
CAS#: 7664-93-9
Synonym: Oil of Vitriol; Sulfuric Acid
Chemical Name: Hydrogen sulfate
Chemical Formula: H2-SO4

Contact Information:

Paramount Chemicals & Plastics, Inc. **CCN 811901**
Warehouse:
14470 S State Road 29
Felda, FL 33930
Phone: (863) 674-1800
Fax: (863) 674-1802
E-mail: kenatparamountchem@earthlink.net

CHEMTREC - 24 Hour Emergency Telephone- call: 1-800-424-9300
CCN 811901

Section 2: Composition and Information on Ingredients

Composition:
Name CAS # % by Weight
Sulfuric Acid 7664-93-9 93%
Toxicological Data on Ingredients: Sulfuric acid: ORAL (LD50): Acute: 2140 mg/kg [Rat.]. VAPOR (LC50): Acute: 510 mg/m
2 hours [Rat]. 320 mg/m 2 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant, corrosive), of ingestion, of inhalation. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Classified 1 (Proven for human.) by IARC, + (Proven.) by OSHA. Classified A2 (Suspected for human.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, lungs, heart, cardiovascular system, upper respiratory tract, eyes, teeth. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

IN CASE OF EYE CONTACT:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

IN CASE OF SKIN CONTACT:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Seek medical attention immediately.

IN CASE OF SERIOUS SKIN CONTACT:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention immediately.

IN CASE OF INHALATION:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention immediately.

IN CASE OF SERIOUS INHALATION:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

IN CASE OF INGESTION:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

IN CASE OF SERIOUS INGESTION:

Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.
Auto-Ignition Temperature: Not applicable.
Flash Points: Not applicable.
Flammable Limits: Not applicable.
Products of Combustion:
Products of combustion are not available since material is non-flammable. However, products of decomposition include fumes of oxides of sulfur. Will react with water or steam to produce toxic and corrosive fumes. Reacts with carbonates to generate
carbon dioxide gas. Reacts with cyanides and sulfides to form poisonous hydrogen cyanide and hydrogen sulfide respectively.
Fire Hazards in Presence of Various Substances: Combustible materials
Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of oxidizing materials.
Fire Fighting Media and Instructions: Not applicable.
Special Remarks on Fire Hazards:
Metal acetylides (Monocesium and Monorubidium), and carbides ignite with concentrated sulfuric acid. White Phosphorous + boiling Sulfuric acid or its vapor ignites on contact. May ignite other combustible materials. May cause fire when sulfuric acid is mixed with Cyclopentadiene, cyclopentanone oxime, nitroaryl amines, hexalithium disilicide, phorphorous (III) oxide, and oxidizing agents such as chlorates, halogens, permanganates.
Special Remarks on Explosion Hazards:
Mixtures of sulfuric acid and any of the following can explode: p-nitrotoluene, pentasilver trihydroxydiaminophosphate, perchlorates, alcohols with strong hydrogen peroxide, ammonium tetraperoxychromate,mercuric nitrite, potassium chlorate, potassium permanganate with potassium chloride, carbides, nitro compounds, nitrates,carbides, phosphorous, iodides, picratres, fulminats, dienes, alcohols (when heated) Nitramide decomposes explosively on contact with concentrated sulfuric acid. 1,3,5-Trinitrosohexahydro-1,3,5-triazine + sulfuric acid causes explosive decompositon.

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and absorb with an inert dry material and place in an appropriate waste disposal container. If necessary, neutralize the residue with a dilute solution of sodium carbonate.
Large Spill:
Corrosive liquid. Poisonous liquid. Stop leak ONLY if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift/ reduce vapors. Prevent entry into waterways/sources, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. Be careful the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture. May corrode metallic surfaces. Store in a metallic or coated fiberboard drum using a strong polyethylene inner package.

Storage:
Hygroscopic. Reacts. violently with water. Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 23°C (73.4°F).
Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 23°C (73.4°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure eyewash stations and safety showers are proximal to the work-station location.
Personal Protection:
Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.
Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Exposure Limits:
TWA: 1 STEL: 3 (mg/m3) [Australia] Inhalation TWA: 1 (mg/m3) from OSHA (PEL) [United States] Inhalation TWA: 1 STEL: 3 (mg/m3) from ACGIH (TLV) [United States] [1999] Inhalation TWA: 1 (mg/m3) from NIOSH [United States] Inhalation TWA: 1 (mg/m3) [United Kingdom (UK)]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Thick oily liquid.)
Odor: Odorless, but has a choking odor when hot.
Taste: Marked acid taste. (Strong.)
Molecular Weight: 98.08 g/mole
Color: Colorless.
pH (1% soln/water): Acidic.
Boiling Point:
270°C (518°F) - 340 deg. C Decomposes at 340 deg. C
Melting Point: -35°C (-31°F) to 10.36 deg. C (93% to 100% purity)
Critical Temperature: Not available.
Specific Gravity: 1.84 (Water = 1)
Vapor Pressure: Not available.
Vapor Density: 3.4 (Air = 1)
Volatility: Not available.
Odor Threshold: Not available.
Water/Oil Dist. Coeff.: Not available.
Ionicity (in Water): Not available.
Dispersion Properties: See solubility in water.
Solubility: Easily soluble in cold water. Sulfuric is soluble in water with liberation of much heat. Soluble in ethyl alcohol.

Section 10: Stability and Reactivity Data

Stability: The product is stable.
Instability Temperature: Not available.
Conditions of Instability:
Conditions to Avoid: Incompatible materials, excess heat, combustible material materials, organic materials, exposure to moist
air or water, oxidizers, amines, bases. Always add the acid to water, never the reverse.
Incompatibility with various substances:

Reactive with oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture.

Corrosivity:

Extremely corrosive in presence of aluminum, of copper, of stainless steel(316). Highly corrosive in presence of stainless
steel(304). Non-corrosive in presence of glass.

Special Remarks on Reactivity:

Hygroscopic. Strong oxidizer. Reacts violently with water and alcohol especially when water is added to the product.
Incompatible (can react explosively or dangerously) with the following: ACETIC ACID, ACRYLIC ACID, AMMONIUM HYDROXIDE, CRESOL, CUMENE, DICHLOROETHYL ETHER, ETHYLENE CYANOHYDRIN, ETHYLENEIMINE, NITRIC ACID, 2-NITROPROPANE, PROPYLENE OXIDE, SULFOLANE, VINYLIDENE CHLORIDE, DIETHYLENE GLYCOL MONOMETHYL ETHER, ETHYL ACETATE, ETHYLENE CYANOHYDRIN, ETHYLENE GLYCOL MONOETHYL ETHER ACETATE, GLYOXAL, METHYL ETHYL KETONE, dehydrating agents, organic materials, moisture (water), Acetic anhydride, Acetone, cyanohydrin, Acetone+nitric acid, Acetone + potassium dichromate, Acetonitrile, Acrolein, Acrylonitrile, Acrylonitrile +water, Alcohols + hydrogen peroxide, ally compounds such as Allyl alcohol, and Allyl Chloride, 2-Aminoethanol, Ammonium hydroxide, Ammonium triperchromate, Aniline, Bromate + metals, Bromine pentafluoride, n-Butyraldehyde, Carbides, Cesium acetylene carbide, Chlorates, Cyclopentanone oxime, chlorinates, Chlorates + metals, Chlorine trifluoride, Chlorosulfonic acid, 2-cyano-4-nitrobenzenediazonium hydrogen sulfate, Cuprous nitride, p-chloronitrobenzene, 1,5-Dinitronaphthlene + sulfur, Diisobutylene, p-dimethylaminobenzaldehyde, 1,3-Diazidobenzene, Dimethylbenzylcarbinol + hydrogen peroxide,Epichlorohydrin, Ethyl alcohol + hydrogen peroxide, Ethylene diamine, Ethylene glycol and other glycols, , Ethylenimine, Fulminates, hydrogen peroxide, Hydrochloric acid, Hydrofluoric acid, Iodine heptafluoride, Indane + nitric acid, Iron, Isoprene, Lithium silicide, Mercuric nitride, Mesityl oxide, Mercury nitride, Metals (powdered), Nitromethane, Nitric acid + glycerides, p-Nitrotoluene, Pentasilver trihydroxydiaminophosphate, Perchlorates, Perchloric acid, Permanganates + benzene, 1-Phenyl-2-methylpropyl alcohol + hydrogen peroxide, Phosphorus, Phosphorus isocyanate, Picrates, Potassium tert-butoxide, Potassium chlorate, Potassium Permanganate and other permanganates, halogens, amines, Potassium Permanganate + Potassium chloride, Potassium Permanganate + water, Propiolactone (beta)-, Pyridine, Rubidium aceteylene carbide, Silver permanganate, Sodium, Sodium carbonate, sodium hydroxide, Steel, styrene monomer, toluene + nitric acid, Vinyl acetate, Thalium (I) azidodithiocarbonate, Zinc chlorate, Zinc Iodide, azides, carbonates, cyanides, sulfides, sulfites, alkali hydrides, carboxylic acid anhydrides, nitriles, olefinic organics, aqueous acids, cyclopentadiene, cyano-alcohols, metal acetylides, Hydrogen gas is generated by the action of the acid on most metals (i.e. lead, copper, tin, zinc, aluminum, etc.). Concentrated sulfuric acid oxidizes, dehydrates, or sulfonates most organic compounds.

Special Remarks on Corrosivity:

Non-corrosive to lead and mild steel, but dillute acid attacks most metals. Attacks many metals releasing hydrogen. Minor
corrosive effect on bronze. No corrosion data on brass or zinc.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2140 mg/kg [Rat.]. Acute toxicity of the vapor (LC50): 320 mg/m3 2 hours [Mouse].

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified 1 (Proven for human.) by IARC, + (Proven.) by OSHA. Classified A2 (Suspected for human.) by ACGIH. May cause damage to the following organs: kidneys, lungs, heart, cardiovascular system, upper respiratory tract, eyes, teeth.

Other Toxic Effects on Humans:

Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact

(corrosive, irritant, permeator), of eye contact (corrosive), of ingestion..
Special Remarks on Toxicity to Animals: Not available.
Special Remarks on Chronic Effects on Humans:
Mutagenicity: Cytogenetic Analysis: Hamster, ovary = 4mmol/L Reproductive effects: May cause adverse reproductive effectsbased on animal data. Developmental abnormalities (musculoskeletal) in rabbits at a dose of 20 mg/m3 for 7 hrs.(RTECS)
Teratogenecity: neither embryotoxic, fetoxic, nor teratogenetic in mice or rabbits at inhaled doses producing some maternal toxicity.
Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes severe skin irritation and burns. Continued contact can cause tissue necrosis.
Eye: Causes severe eye irritation and burns. May cause irreversible eye injury. Ingestion: Harmful if swallowed. May cause permanent damage to the digestive tract. Causes gastrointestial tract burns. May cause perforation of the stomach, GI bleeding, edema of the glottis, necrosis and scarring, and sudden circulatory collapse(similar to acute inhalation). It may also cause systemic toxicity with acidosis.
Inhalation: May cause severe irritation of the respiratory tract and mucous membranes with sore throat, coughing, shortness of breath, and delayed lung edema. Causes chemical burns to the repiratory tract. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis,and pulmonary edema. Cause corrosive action on mucous membranes. May affect cardiovascular system (hypotension, depressed cardiac output, bradycardia). Circulatory collapse with clammy skin, weak and rapid pulse, shallow respiration, and scanty urine may follow. Circulatory shock is often the immediate cause of death. May also affect teeth(changes in teeth and supporting structures - erosion, discoloration). Chronic Potential Health Effects: Inhalation: Prolonged or repeated inhalation may affect behavior (muscle contraction or spasticity), urinary system (kidney damage), and cardiovascular system, heart (ischemic heart leisons), and respiratory system/lungs(pulmonary edema, lung damage), teeth (dental discoloration, erosion).
Skin: Prolonged or repeated skin contact may cause dermatitis, an allergic skin reaction.

Section 12: Ecological Information

Ecotoxicity: Ecotoxicity in water (LC50): 49 mg/l 48 hours [bluegill/sunfish].
BOD5 and COD: Not available.
Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.
Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Sulfuric acid may be placed in sealed container or absorbed in vermiculite, dry sand, earth, or a similar material. It may also be diluted and neutralized. Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material
Identification: : Sulfuric acid UNNA: 1830 PG: II
Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Illinois toxic substances disclosure to employee act: Sulfuric acid New York release reporting list: Sulfuric acid Rhode Island RTK hazardous substances: Sulfuric acid Pennsylvania RTK: Sulfuric acid Minnesota:

Sulfuric acid Massachusetts RTK: Sulfuric acid New Jersey: Sulfuric acid California Director's List of Hazardous Substances (8 CCR 339): Sulfuric acid Tennessee RTK: Sulfuric acid TSCA 8(b) inventory: Sulfuric acid SARA 302/304/311/312 extremely hazardous substances: Sulfuric acid SARA 313 toxic chemical notification and release reporting: Sulfuric acid CERCLA: Hazardous substances.:
Sulfuric acid: 1000 lbs. (453.6 kg)
Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).
Other Classifications:
DSCL (EEC):R35- Causes severe burns. S2- Keep out of the reach of children. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S30- Never add water to this product. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
HMIS (U.S.A.):
Health Hazard: 3
Fire Hazard: 0
Reactivity: 2
Personal Protection:
National Fire Protection Association (U.S.A.):
Health: 3
Flammability: 0
Reactivity: 2
Specific hazard:
Protective Equipment:
Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References:
-Material safety data sheet emitted by: The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987.

Created: 10/10/2005 12:15 PM
Last Updated: 12/2015

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Tri-Chem Industries Your Specialty Chemical Source

Phone: (972) 745-6875 **Fax:** (972) 745-6870 P.O. Box 2056 Coppell, TX 75019

Safety Data Sheet

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name • **Phosphoric Acid 75% FCC**

Synonyms • Orthophosphoric Acid

CAS Number • 7664-38-2

EC Number • 231-633-2

EU Index Number • 015-011-00-6

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified use(s) • Polymerization of propylene; alkylating catalyst. Control of bacteria growth in selected processed foods. Flocculation agent for clarification of sugar juices after liming process. Various other uses in food products. Chemical – Strengthening or fortifying weak phosphoric acid solutions. Polymerization of propylene; alkylating catalyst

1.3 Details of the supplier of the safety data sheet

Manufacturer • Tri-Chem Industries
3121 Pinewood Dr.
Arlington, TX 75019

Telephone (Technical) • 972-745-6875

1.4 Emergency telephone number

Manufacturer • 800-424-9300 - Chemtrec - within USA and Canada

Manufacturer • +1 703-527-3887 - Chemtrec - outside USA and Canada (collect calls accepted)

Manufacturer • 972-745-6875 Technical director

Section 2: Hazards Identification

EU/EEC

According to Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]
According to EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

CLP

- Corrosive to Metals 1 - H290
  Skin Corrosion 1B - H314

DSD/DPD

- Corrosive (C)

  R34

2.2 Label Elements

CLP

DANGER

Hazard statements

- H290 - May be corrosive to metals
  H314 - Causes severe skin burns and eye damage.

Precautionary statements

Prevention

- P234 - Keep only in original container.
  P260 - Do not breathe mist/vapours/spray.
  P264 - Wash thoroughly after handling.
  P280 - Wear protective gloves/protective clothing/eye protection/face protection.

Response

- P390 - Absorb spillage to prevent material damage.
  P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
  P363 - Wash contaminated clothing before reuse.
  P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
  P310 - Immediately call a POISON CENTER or doctor/physician.
  P321 - Specific treatment (see supplemental first aid instructions on this label).
  P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage/Disposal

- P406 - Store in corrosive resistant/ container with a resistant inner liner.
  P405 - Store locked up.
  P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

DSD/DPD

Risk phrases

- R34 - Causes burns.

Safety phrases

- S36 - Wear suitable protective clothing.
  S37 - Wear suitable gloves.
  S39 - Wear eye/face protection.
  S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

2.3 Other Hazards

CLP

- According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

DSD/DPD

- This product is considered dangerous according to the European Directive 67/548/EEC.

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012

- Corrosive to Metals 1 - H290
  Skin Corrosion 1B - H314

2.2 Label elements

OSHA HCS 2012

DANGER

Hazard statements

- May be corrosive to metals - H290
  Causes severe skin burns and eye damage. - H314

Precautionary statements

Prevention

- Keep only in original container. - P234
  Do not breathe mist/vapours/spray. - P260
  Wash thoroughly after handling. - P264
  Wear protective gloves/protective clothing/eye protection/face protection. - P280

Response

- Absorb spillage to prevent material damage. - P390
  IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. - P303+P361+P353
  IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. - P301+P330+P331
  Wash contaminated clothing before reuse. - P363
  IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. - P304+P340
  Immediately call a POISON CENTER or doctor/physician. - P310
  Specific treatment, see supplemental first aid information. - P321
  IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. - P305+P351+P338

Storage/Disposal

- Store in corrosive resistant/ container with a resistant inner liner. - P406
  Store locked up. - P405
  Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

2.3 Other hazards

OSHA HCS 2012

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to WHMIS

2.1 Classification of the substance or mixture

WHMIS

- Corrosive - E

2.2 Label elements

WHMIS

- Corrosive - E

2.3 Other hazards

WHMIS

- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

3.1 Substances

Composition					
Chemical Name	**Identifiers**	**%**	**LD50/LC50**	**Classifications According to Regulation/Directive**	**Comments**
Phosphoric acid	**CAS:**7664-38-2 **EC Number:**231-633-2	36% TO 95%	Ingestion/Oral-Rat LD50 • 1.25 g/kg Inhalation-Rat LC50 • 25.5 mg/m³	**EU DSD/DPD:** Annex I: C; R34 **EU CLP:** Annex VI: Skin Corr. 1B, H314, Corr. to Metals 1, H290 **OSHA HCS 2012:** Skin Corr. 1B, H314, Corr. to Metals 1, H290	NDA

3.2 Mixtures

- Material does not meet the criteria of a mixture in accordance with Regulation (EC) No 1272/2008.

Section 4 - First Aid Measures

4.1 Description of first aid measures

Inhalation

- Administer oxygen if breathing is difficult. Do not use mouth-to-mouth method if victim inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Give artificial respiration if victim is not breathing. Move victim to fresh air.

Skin

- For minor skin contact, avoid spreading material on unaffected skin. In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Wash skin with soap and water. Remove and isolate contaminated clothing and shoes. Wash contaminated clothing before reuse.

Eye

- In case of contact with substance, immediately flush eyes with running water for at least 15 minutes. Seek immediate medical attention, preferably with an ophthalmologist. If the physician is not immediately available, eye irrigation should be continued for an additional 15 minutes. If it is necessary to transport the patient to a physician and the eye needs to be bandaged, use a dry sterile cloth pad and cover both eyes.

Ingestion

- If swallowed give 2-3 glasses of water if victim is conscious and alert. Do not give anything by mouth to an unconscious person. Do NOT induce vomiting. Obtain medical attention immediately if ingested. Do not use mouth-to-mouth method if victim ingested the substance. Do not leave victim unattended. To prevent aspiration of swallowed product, lay victim on side with head lower than waist. Persons attending the victim should avoid direct contact with heavily contaminated clothing and vomitus. Wear impervious gloves while decontaminating skin and hair.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to Physician

- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

4.4 Other information

- Call 911 or emergency medical service. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media
- Not combustible. Use extinguishing media suitable for surrounding fire.

Unsuitable Extinguishing Media
- None known.

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards
- Not combustible.
  Under fire conditions, toxic, corrosive fumes are emitted.

Hazardous Combustion Products
- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
  Oxides of phosphorus.

5.3 Advice for firefighters

- Wear positive pressure self-contained breathing apparatus (SCBA).
  Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
  Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
  Keep unauthorized personnel away.
  Evacuate residents who are downwind of fire.
  Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.
  Persons who may have been exposed to contaminated smoke should be immediately examined by a physician and checked for symptoms of poisoning. The symptoms should not be mistaken for heat exhaustion or smoke inhalation.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions
- Ventilate enclosed areas. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Emergency Procedures
- Keep unauthorized personnel away. Dike spill using absorbent or impervious materials such as earth, sand or clay. Dike or retain dilution water or water from firefighting for later disposal.

6.2 Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas. Runoff from fire control or dilution water may cause pollution.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures
- Exercise caution during neutralization as considerable heat may be generated. Neutralize spill area with soda ash, sodium bicarbonate or lime. Flush neutralized spill with copious amounts of water.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling
- Do not get on skin or in eyes. Avoid breathing vapors and mists. Do not ingest. Handle and open container with care. Use only with adequate ventilation. Use caution when combining with water; DO NOT add water to corrosive liquid, ALWAYS add corrosive liquid to water while stirring to prevent release of heat, steam and fumes. This product reacts violently with bases liberating heat and causing spattering.

7.2 Conditions for safe storage, including any incompatibilities

Storage

- Store in a dry, well-ventilated place. Store locked up. Keep away from incompatible materials. Ventilate enclosed areas.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines						
	Result	**ACGIH**	**Argentina**	**Australia**	**Austria**	**Belgium**
Phosphoric acid (7664-38-2)	STELs	3 mg/m3 STEL	3 mg/m3 STEL [CMP- CPT]	3 mg/m3 STEL	2 mg/m3 STEL [KZW] (4 X 15 min)	2 mg/m3 STEL
	TWAs	1 mg/m3 TWA	1 mg/m3 TWA [CMP]	1 mg/m3 TWA	Not established	1 mg/m3 TWA
	MAKs	Not established	Not established	Not established	1 mg/m3 TWA [TMW]	Not established

Exposure Limits/Guidelines (Con't.)						
	Result	**China**	**Czech Republic**	**Denmark**	**Egypt**	**Finland**
Phosphoric acid (7664-38-2)	STELs	3 mg/m3 STEL	Not established	Not established	3 mg/m3 STEL	2 mg/m3 STEL
	TWAs	1 mg/m3 TWA	1 mg/m3 TWA	1 mg/m3 TWA	Not established	1 mg/m3 TWA
	Ceilings	Not established	2 mg/m3 Ceiling	Not established	Not established	Not established

Exposure Limits/Guidelines (Con't.)						
	Result	**France**	**Germany DFG**	**Germany TRGS**	**Greece**	**Hong Kong**
Phosphoric acid (7664-38-2)	STELs	0.5 ppm STEL [VLCT] (indicative limit); 2 mg/m3 STEL [VLCT] (indicative limit)	Not established	Not established	3 mg/m3 STEL	3 mg/m3 STEL
	TWAs	0.2 ppm TWA [VME] (indicative limit); 1 mg/m3 TWA [VME] (indicative limit)	Not established	2 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, inhalable fraction, exposure factor 2)	1 mg/m3 TWA	Not established
	Ceilings	Not established	4 mg/m3 Peak (inhalable fraction)	Not established	Not established	Not established
	MAKs	Not established	2 mg/m3 TWA MAK (inhalable fraction)	Not established	Not established	Not established

Exposure Limits/Guidelines (Con't.)						
	Result	**Hungary**	**India**	**Indonesia**	**Ireland**	**Israel**
Phosphoric acid (7664-38-2)	TWAs	1 mg/m3 TWA [AK]	1 mg/m3 TWA	1 mg/m3 TWA	1 mg/m3 TWA	1 mg/m3 TWA
	STELs	2 mg/m3 STEL [CK]	3 mg/m3 STEL	Not established	2 mg/m3 STEL	3 mg/m3 STEL

Exposure Limits/Guidelines (Con't.)						
	Result	**Italy**	**Japan**	**Korea**	**Malaysia**	**Mexico**
Phosphoric acid	TWAs	1 mg/m3 TWA	1 mg/m3 OEL	1 mg/m3 TWA (Serial No. 459)	1 mg/m3 TWA	1 mg/m3 TWA LMPE-PPT

(7664-38-2)	STELs	2 mg/m3 STEL	Not established	3 mg/m3 STEL (Serial No. 465)	Not established	3 mg/m3 STEL [LMPE-CT]

Exposure Limits/Guidelines (Con't.)						
	Result	**Netherlands**	**New Zealand**	**NIOSH**	**Norway**	**OSHA**
Phosphoric acid (7664-38-2)	TWAs	1 mg/m3 TWA	1 mg/m3 TWA	1 mg/m3 TWA	1 mg/m3 TWA	1 mg/m3 TWA
	STELs	2 mg/m3 STEL	Not established	3 mg/m3 STEL	Not established	Not established

Exposure Limits/Guidelines (Con't.)						
	Result	**Philippines**	**Poland**	**Portugal**	**Singapore**	**South Africa**
Phosphoric acid (7664-38-2)	STELs	Not established	2 mg/m3 STEL	3 mg/m3 STEL [VLE-CD	3 mg/m3 STEL	3 mg/m3 STEL
	TWAs	1 mg/m3 TWA	1 mg/m3 TWA [NDS]	1 mg/m3 TWA [VLE-MP]	1 mg/m3 PEL	1 mg/m3 TWA

Exposure Limits/Guidelines (Con't.)						
	Result	**Spain**	**Sweden**	**Switzerland**	**Taiwan**	**United Kingdom**
Phosphoric acid (7664-38-2)	MAKs	Not established	Not established	1 mg/m3 TWA [MAK]	Not established	Not established
	STELs	2 mg/m3 STEL [VLA-EC]	3 mg/m3 STV	2 mg/m3 STEL [KZW] (4 X 15)	Not established	2 mg/m3 STEL
	TWAs	1 mg/m3 TWA [VLA-ED] (indicative limit value; it is prohibited the partial or complete commercialization or use of this substance as a phytosanitary or biocide compound)	1 mg/m3 LLV	Not established	1 mg/m3 TWA	1 mg/m3 TWA

Exposure Limits/Guidelines (Con't.)		
	Result	**Venezuela**
Phosphoric acid (7664-38-2)	STELs	3 mg/m3 STEL [LEB
	TWAs	1 mg/m3 TWA [CAP

8.2 Exposure controls

Engineering Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal Protective Equipment

Respiratory

- Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

Eye/Face

- Wear face shield and eye protection. An emergency eye wash must be readily accessible to the work area. Ensure safety shower is available near all areas of bulk storage, delivery and use.

Hands

- Wear protective gloves selected with regard to both durability as well as permeation resistance.

Skin/Body

- Wear protective clothing

General Industrial Hygiene Considerations

- Do not get in eyes or on skin or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Handle in accordance with good industrial hygiene and safety practice.

Environmental Exposure Controls

- Follow best practice for site management and disposal of waste.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene
MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration
MSHA = Mine Safety and Health Administration
NIOSH = National Institute of Occupational Safety and Health
OEL = Occupational Exposure Limit(s)
OSHA = Occupational Safety and Health Administration
PEL = Permissible Exposure Level determined by the Occupational Safety and Health Administration (OSHA)
STEL = Short Term Exposure Limits are based on 15-minute exposures
STEV = Short Term Exposure Value
NAB = Threshold Values (Indonesia)
TWAEV = Time-Weighted Average Exposure Value
TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Liquid	Appearance/Description	Colorless viscous liquid with no odor.
Color	Colorless	Odor	Odorless
Odor Threshold	Data lacking		
General Properties			
Boiling Point	100 to 200 C(212 to 392 F)	Melting Point	Refer to Product data sheet for specific information.
Decomposition Temperature	Data lacking	pH	< 1
Specific Gravity/Relative Density	1.22 to 1.81 Water=1 @ 25 C(77 F)	Water Solubility	Miscible
Viscosity	Data lacking	Explosive Properties	Not relevant.
Oxidizing Properties:	Not relevant.		
Volatility			
Vapor Pressure	< 2 mmHg (torr) @ 20 C(68 F)	Vapor Density	Data lacking
Evaporation Rate	Data lacking		
Flammability			
Flash Point	Not relevant	UEL	Not relevant
LEL	Not relevant	Autoignition	Not relevant
Flammability (solid, gas)	Not relevant.		
Environmental			
Octanol/Water Partition coefficient	Data lacking		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- Stable

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- Incompatible materials.

10.5 Incompatible materials

- Strong oxidizing agents, strong reducing agents, bases and certain metals

10.6 Hazardous decomposition products

- Oxides of phosphorus.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Other Material Information

- This material is an acid. The primary effects and toxicity of this material are due to its corrosive nature.

	CAS	
PHOS ACID 75% FCC	7664-38-2	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 1530 mg/kg • Comments: Data for phosphoric acid; Skin-Rabbit LD50 • 2740 mg/kg; **Irritation:** Eye-Rabbit • 119 mg/kg • Severe irritation, irreversible, burns (corrosive) • Comments: Data for phosphoric acid; Skin-Rabbit • 595 mg/kg 24 Hour(s) • Severe irritation, irreversible, burns (corrosive)

GHS Properties	Classification
Acute toxicity	**EU/CLP** • Acute Toxicity - Dermal - Data lacking; Acute Toxicity - Inhalation - Data lacking; Acute Toxicity - Oral - Data lacking **OSHA HCS 2012** • Acute Toxicity - Dermal - Inconclusive data; Acute Toxicity - Inhalation - Inconclusive data; Acute Toxicity - Oral - Data lacking
Aspiration Hazard	**EU/CLP** • Data lacking **OSHA HCS 2012** • Not relevant
Carcinogenicity	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Germ Cell Mutagenicity	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Skin corrosion/Irritation	**EU/CLP** • Skin Corrosion 1B **OSHA HCS 2012** • Skin Corrosion 1B
Skin sensitization	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
STOT-RE	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
STOT-SE	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Toxicity for Reproduction	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Respiratory sensitization	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Serious eye damage/Irritation	**EU/CLP** • Data lacking **OSHA HCS 2012** • Classification criteria not met

Route(s) of entry/exposure

- Inhalation, Skin, Eye, Ingestion

Potential Health Effects

Inhalation

Acute (Immediate)

- Under normal conditions of use, no health effects are expected.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive fumes may cause bronchial irritation with chronic cough.

Skin

Acute (Immediate)
- Causes severe skin burns and eye damage.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive materials will cause dermatitis.

Eye

Acute (Immediate)
- Corrosive. Can cause permanent damage to the cornea, blindness.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive materials or fumes may cause conjunctivitis.

Ingestion

Acute (Immediate)
- Causes corrosion, burns to mouth and esophagus, abdominal pain, chest pain, nausea, vomiting, diarrhea, seizures. Aspiration of the swallowed or vomited product can cause severe pulmonary complications.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive materials or fumes may cause gastrointestinal distrubances.

Carcinogenic Effects
- This product does not contain any ingredient designated by IARC, NTP, ACGIH or OSHA as probable or suspected human carcinogens.

Key to abbreviations
LD = Lethal Dose
TC = Toxic Concentration

Section 12 - Ecological Information

12.1 Toxicity

PHOS ACID 75% FCC			7664-38-2		
Dosage	**Species**	**Duration**	**Results**	**Exposure Conditions**	**Comments**
138 mg/L	**Fish:** Mosquitofish	96 Hour(s)	LC50	NDA	NDA

12.2 Persistence and degradability
- No data found for product.

12.3 Bioaccumulative potential
- No data found for product.

12.4 Mobility in Soil
- No data found for product.

12.5 Results of PBT and vPvB assessment
- PBT and vPvB assessment has not been carried out.

12.6 Other adverse effects

Ecological Fate
- No data found for product.

12.7 Other Information
- No specific biodegradation test data located. While acidity of this material is readily reduced in natural waters, the resulting phosphate may persist indefinitely or incorporate into biological systems.

Section 13 - Disposal Considerations

13.1 Waste treatment methods

Product waste
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. This material is considered an EPA hazardous waste. EPA "RCRA" Hazardous Waste Code: "C" Corrosive.

Packaging waste
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	UN1805	Phosphoric acid solution	NDA	III	NDA
TDG	UN1805	PHOSPHORIC ACID, LIQUID	NDA	III	NDA
IMO/IMDG	UN1805	PHOSPHORIC ACID SOLUTION	NDA	III	NDA
IATA/ICAO	UN1805	Phosphoric Acid, Solution	NDA	III	NDA

14.6 Special precautions for user
- None known.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
- Not relevant.

14.8 Other information
- The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

DOT
- Phosphoric acid has a reportable quantity of 5000 lbs (2270 kg) as listed in Appendix A to 49 CFR 172.101.

Section 15 - Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications
- Acute

Inventory						
Component	**CAS**	**Canada DSL**	**Canada NDSL**	**China**	**EU EINECS**	**EU ELNICS**
Phosphoric acid	7664-38-2	Yes	No	Yes	Yes	No

Inventory (Con't.)				
Component	**CAS**	**New Zealand**	**Philippines PICCS**	**TSCA**
Phosphoric acid	7664-38-2	Yes	Yes	Yes

Canada

Labor

Canada - List of Prohibited and Restricted Cosmetic Ingredients (The Cosmetic Ingredient Hotlist)

• Phosphoric acid	7664-38-2	Not Listed

Canada - WHMIS - Classifications of Substances

• Phosphoric acid	7664-38-2	E (including <=85%)

Canada - WHMIS - Ingredient Disclosure List

• Phosphoric acid	7664-38-2	1 %

Environment

Canada - 2004 NPRI (National Pollutant Release Inventory)

• Phosphoric acid	7664-38-2	Not Listed

Canada - 2005 NPRI (National Pollutant Release Inventory)

• Phosphoric acid	7664-38-2	Not Listed

Canada - CEPA - Greenhouse Gases Subject to Mandatory Reporting

• Phosphoric acid	7664-38-2	Not Listed

Canada - CEPA - Priority Substances List

• Phosphoric acid	7664-38-2	Not Listed

Canada - DWQ (Drinking Water Quality) - IMACs

• Phosphoric acid	7664-38-2	Not Listed

Other

Canada - Accelerated Reduction/Elimination of Toxics (ARET)

• Phosphoric acid	7664-38-2	Not Listed

Canada New Brunswick

Environment

Canada - New Brunswick - Ozone Depleting Substances - Schedule A

• Phosphoric acid	7664-38-2	Not Listed

Canada - New Brunswick - Ozone Depleting Substances - Schedule B

• Phosphoric acid	7664-38-2	Not Listed

Germany

Environment

Germany - TA Luft - Types and Classes

• Phosphoric acid	7664-38-2	Not Listed

Germany - Water Classification (VwVwS) - Annex 1

• Phosphoric acid	7664-38-2	Not Listed

Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes

• Phosphoric acid	7664-38-2	ID Number 392, hazard class 1 - low hazard to waters

Germany - Water Classification (VwVwS) - Annex 3

• Phosphoric acid	7664-38-2	Not Listed

Philippines

Other

Philippines - Priority Chemical List

• Phosphoric acid	7664-38-2	Not Listed

Singapore

Other

Singapore - Corrosive and Explosive Substances - Corrosive Substances

• Phosphoric acid	7664-38-2	Not Listed

Thailand

Environment

Thailand - Quantities of Chemicals

• Phosphoric acid	7664-38-2	1 mg/m3 Quantities of Chemicals

Thailand - Water Quality Criteria - Maximum Concentration Allowance

• Phosphoric acid	7664-38-2	Not Listed

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

• Phosphoric acid	7664-38-2	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• Phosphoric acid	7664-38-2	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

• Phosphoric acid	7664-38-2	Not Listed

U.S. - CAA (Clean Air Act) - Class II Ozone Depletors

• Phosphoric acid	7664-38-2	Not Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Phosphoric acid	7664-38-2	5000 lb final RQ; 2270 kg final RQ

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

• Phosphoric acid	7664-38-2	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

• Phosphoric acid	7664-38-2	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

• Phosphoric acid	7664-38-2	Not Listed

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

• Phosphoric acid	7664-38-2	Not Listed

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

• Phosphoric acid	7664-38-2	Not Listed

Other

U.S. - FDA - Direct Food Additives

• Phosphoric acid	7664-38-2	Not Listed

U.S. - FDA - Food Additives Generally Recognized as Safe (GRAS)

• Phosphoric acid	7664-38-2	21 CFR 182.1073

U.S. - FDA - Total Food Additives List Sourced from EAFUS

		133.123, 133.124, 133.129, 133.169, 133.173, 133.178,

• Phosphoric acid	7664-38-2	133.179, 163.110, 163.111, 163.112, 175.300, 177.2260, 178.1010, 178.3520, 182.1073, 73.275, 73.85

U.S. - USDA - National Organic Program - Substances Allowed as Ingredients in or on Organic Processed Products

• Phosphoric acid	7664-38-2	(cleaning of food-contact surfaces and equipment only)

United States -California

Environment

U.S. - California - Proposition 65 - Carcinogens List

• Phosphoric acid	7664-38-2	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

• Phosphoric acid	7664-38-2	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Phosphoric acid	7664-38-2	Not Listed

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

• Phosphoric acid	7664-38-2	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

• Phosphoric acid	7664-38-2	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

• Phosphoric acid	7664-38-2	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Last Revision Date
- 14/May/2015

Preparation Date
- 14/May/2015

Disclaimer/Statement of Liability
- The information herein is given in good faith but no warranty, expressed or implied, is made.

Key to abbreviations

NDA = No Data Available

KOCH FERTILIZER TRADING Sárl

SAFETY DATA SHEET

1. Identification

GHS product identifier	**Urea**
MSDS Number	KFT_Urea_GHS_EN
Version #	01
Issue date	02-24-2012
CAS #	57-13-6
Recommended use	Fertilizer.
Recommended Restrictions	None known.
Synonym(s)	Carbamide, Carbamidic Acid
Manufacturer information	Koch Fertilizer Trading Sarl 20, route de Pre-Bois Case Postale 1843 Geneva Switzerland kochmsds@kochind.com +11 41 227 37 4223 or +1 316 828 7672 For Chemical Emergency Call CHEMTREC day or night USA/Canada - 1.800.424.9300 Outside USA/Canada 1.703.527.3887 (collect calls accepted)

2. Hazards identification

GHS classification

Physical hazards	Not classified.
Health hazards	Not classified.
Environmental hazards	Not classified.

Precautionary statement

Prevention	Use personal protective equipment as required.
Response	Get medical advice/attention if you feel unwell.
Storage	Store away from incompatible materials.
Disposal	Dispose of waste and residues in accordance with local authority requirements.

Specific hazards Dust may irritate skin. High concentrations of dust may irritate throat and respiratory system and cause coughing. Accidental ingestion of urea fertilizer caused nausea, persistent violent vomiting, excitement and convulsions. Complete recovery was observed within a few days. However, ingestion is not likely to be a primary route of occupational exposure.

3. Composition/information on ingredients

Non-hazardous components	CAS #	Percent
Urea*	57-13-6	95 - 100

Composition comments *Treated with a non-hazardous anti-caking agent, less than 1% by weight. This Safety Data Sheet is not a guarantee of product specification or NPK value(s). NPK content is on specified sales orders, customer invoices, or product specification sheets obtained from supplier.

4. First aid measures

First aid procedures

Inhalation	Move to fresh air. Get medical attention if any discomfort continues.
Skin	Wash contact areas with soap and water. Get medical attention if irritation develops and persists.
Eye	Dust in the eyes: Do not rub eyes. Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if irritation persists after washing.
Ingestion	Rinse mouth thoroughly. Get medical attention if any discomfort continues.

Most important symptoms and effects, both acute and delayed Symptoms can include irritation, redness, scratching of the cornea, and tearing.

Notes to physician Treat symptomatically.

General advice	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Use fire-extinguishing media appropriate for surrounding materials.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	Fire will produce irritating, corrosive and/or toxic gases.
Protective equipment and precautions for firefighters	Move containers from fire area if you can do it without risk. Use water spray to prevent dust formation, absorb heat, keep containers cool and protect fire-exposed material.

6. Accidental release measures

Personal precautions	Avoid inhalation of dust and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing. Use personal protection recommended in Section 8 of the MSDS.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not allow to enter drains, sewers or watercourses.
Methods for containment	Stop the flow of material, if this is without risk. If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product.
Methods for cleaning up	Avoid dust formation. After removal flush contaminated area thoroughly with water. Never return spills to original containers for re-use.

7. Handling and storage

Handling	Avoid inhalation of dust and contact with skin and eyes. Use only with adequate ventilation. Use work methods which minimize dust production. Keep the workplace clean.
Storage	Store in a well-ventilated place. Store in a cool, dry place. Keep container tightly closed. Store away from incompatible materials.

8. Exposure controls / personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Recommended monitoring procedures	Follow standard monitoring procedures.
Engineering controls	Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of dust.
Personal protective equipment	
Eye/face protection	Use tight fitting goggles if dust is generated.
Skin protection	Risk of contact: Wear appropriate clothing to prevent any possibility of skin contact.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. No specific recommendation made, but protection against nuisance dust must be used when the general level exceeds 10 mg/m3.
Hand protection	Risk of contact: Wear protective gloves. Suitable gloves can be recommended by the glove supplier.

9. Physical and chemical properties

Appearance	White granules with faint ammonia odor.
Physical state	Solid.
Color	White.
Form	Granular. Pellets. Prilled.
Odor	Ammonia-like. Faint, characteristic.
Odor threshold	Not available.
pH	8 - 8.5 10% solution
Melting point/Freezing point	270.9 °F (132.7 °C)
Boiling point	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Flammability limits in air, lower, % by volume	Not available.

Flammability limits in air, upper, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	1.335 (water=1)
Solubility (H2O)	Soluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Bulk density	48 - 52 lb/ft³ (Packed)
Molecular weight	60.06 g/mol

10. Stability and reactivity

Chemical stability	Normally stable. May gradually give off ammonia. The product is hygroscopic and will absorb water by contact with the moisture in the air.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Moisture. High temperatures. Contact with incompatible materials.
Incompatible materials	Reacts violently with strong oxidants, nitrites, inorganic chlorides, chlorites and perchlorates causing fire and explosion hazard.
Hazardous decomposition products	Carbon oxides. Nitrogen oxides (NOx). Ammonia. Biuret.

11. Toxicological information

Toxicological data

Product	Test Results
Urea* (57-13-6)	Acute Oral LD50 Rat: 8471 mg/kg

Routes of exposure	Eye contact. Skin contact. Inhalation.
Toxicological information	Occupational exposure to the substance or mixture may cause adverse effects.
Acute toxicity	Dust in the eyes will cause irritation. Dust may irritate skin. High concentrations of dust may irritate throat and respiratory system and cause coughing.
Skin corrosion/irritation	May cause skin irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Respiratory sensitization	No data available.
Skin sensitization	Not a skin sensitizer.
Mutagenicity	No data available.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.
Reproductive toxicity	No data available.
Specific target organ toxicity - single exposure	No data available.
Specific target organ toxicity - repeated exposure	No data available.
Aspiration hazard	No data available.
Chronic effects	Frequent inhalation of dust over a long period of time increases the risk of developing asthma, chronic lung diseases, and skin irritation.
Symptoms	Symptoms can include irritation, redness, scratching of the cornea, and tearing.
Other information	No other specific acute or chronic health impact noted.

12. Ecological information

Ecotoxicological data

Product	Test Results
Urea* (57-13-6)	EC50 Water flea (Daphnia magna): 3910 mg/l 48 hours

Ecotoxicity	The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Environmental effects	The product may cause risk of hazardous effects to the environment.
Persistence / degradability	Not available.
Bioaccumulation	No data available.
Mobility	The product is water soluble and may spread in water systems.
Other adverse effects	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

13. Disposal considerations

Disposal methods	Dispose of this material and its container to hazardous or special waste collection point. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

ADR

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	No information available.

15. Regulatory information

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other information

Disclaimer

NOTICE: The information presented herein is based on data considered to be accurate as of the date of preparation of this Safety Data Sheet (SDS) and was prepared pursuant to Government regulation(s) that identify specific types of information to be provided. This SDS may not be used as a commercial specification sheet of manufacturer or seller, and no warranty or representation, expressed or implied, is made as to the accuracy or comprehensiveness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. Additional information may be needed to evaluate other uses of the product, including use of the product in combination with any materials or in any processes other than those specifically referenced. Information provided herein with respect to any hazards that may be associated with the product is not meant to suggest that use of the product in a given application will necessarily result in any exposure or risk to workers or the general public. No responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product. Purchasers and users assume all risk of use, storage and handling of the product in compliance with applicable federal, state and local laws and regulations. Purchasers and users of the product specifically should advise all of their employees, agents, contractors and customers who will use the product of this (M)SDS.

Revision date

04-17-2012

TARGET SHEET

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